Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS

VOLUME XII. NEW-YORK, JULY 25, 1857. NUMBER 46.

THE
Scientific American,
PUBLISHED WEEKLY
At 128 Fulton street, N. Y. (Sun Buildings.)
BY MUNN & CO.
O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns in the United States.

Sampson Low, Son & Co., the American Booksellers, 47 Ludgate Hill, London, Eng., are the English Agents to receive subscriptions for the Scientific American.

Single copies of the paper are on sale at the office of publication and at all the periodical stores in this city, Brooklyn, and Jersey City.

TERMS—$2 a-year,—$1 in advance and the remainder in six months.

☞ See Prospectus on last page. No Traveling Agents employed.

Rockets.

The beautiful display made by a rocket is always attended with a greater or less danger of accident, due to the falling of the stick, which is necessarily attached to steady and direct its flight. We have known several narrow escapes from being hit by a stick, which, from the sound made as it struck the pavement, would have caused a very severe blow had it chanced to strike in the same manner endwise on a human head. The explosion of the charge is almost universally harmless, as the management is so simple that the display is almost certain to occur at a great elevation; but when, from any chance, a large rocket is directed into a crowd, the affair becomes very serious.

On the last anniversary of the Fourth in Chicago, while a fire was in progress in a store containing fireworks, a rocket chanced to be driven across the street from the burning building, and entered the head of a lady who was leaning on the shoulder of her husband, near a window, killing her instantly. It is believed to have exploded at the moment of contact with her head. The missile penetrated and completely shattered her skull.

Centrifugal Battery.

The accompanying figures illustrate a Centrifugal Battery, designed by Albert Potts, of Philadelphia, for projecting or throwing with accuracy to a considerable distance, bullets, balls, or other ponderable bodies, and for which a patent was granted him on the 19th of May last.

Fig. 1 represents an elevation or side view of the machine, and fig. 2 a longitudinal vertical section thereof, taken through the middle of the shaft or axle of the main wheel, and of the barrel or chamber therein for the passage of the balls. Fig. 3 shows, on a smaller scale, the arrangement for working two from one vertical shaft.

It is evident that the great difficulty in a centrifugal machine for this purpose lies in the uncertainty of the elevation at which it would be discharged, and this is the point to which this improvement is directed.

A represents the main wheel, having its axis, B, running in boxes fitted into stout supports. On the end of the axle is fitted a small drum or pulley, B′, whereby rotary motion is given to the main wheel from any suitable power. One end of the axle, B, is hollow, as shown in fig. 2. This opening connects with a similar chamber or channel running diametrically through the middle of the main wheel as seen at R R, fig. 2. I I, fig. 2, are small cylindrical plugs or axles, fitted to turn freely in the main wheel, and having their centers, as nearly as practicable, coincident with the center of the chamber or channel, R, running through the main wheel. The letters H H, in fig. 1, represent small pinions or worm wheels, fitted on the outer ends of these said plugs or axles. The diameter of these plugs is somewhat greater than that of the channel in the main wheel. A small portion of each plug, lying within the channel in the main wheel, is

POTTS' CENTRIFUGAL BATTERY.

Fig. 2

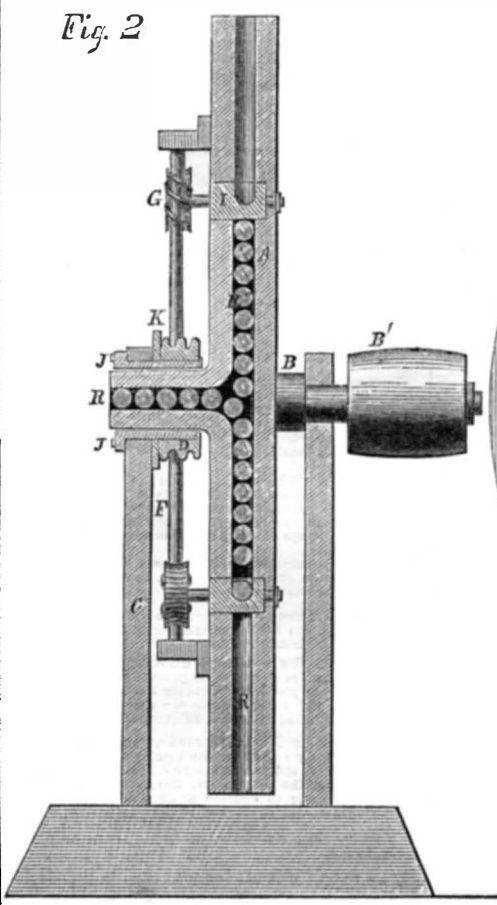
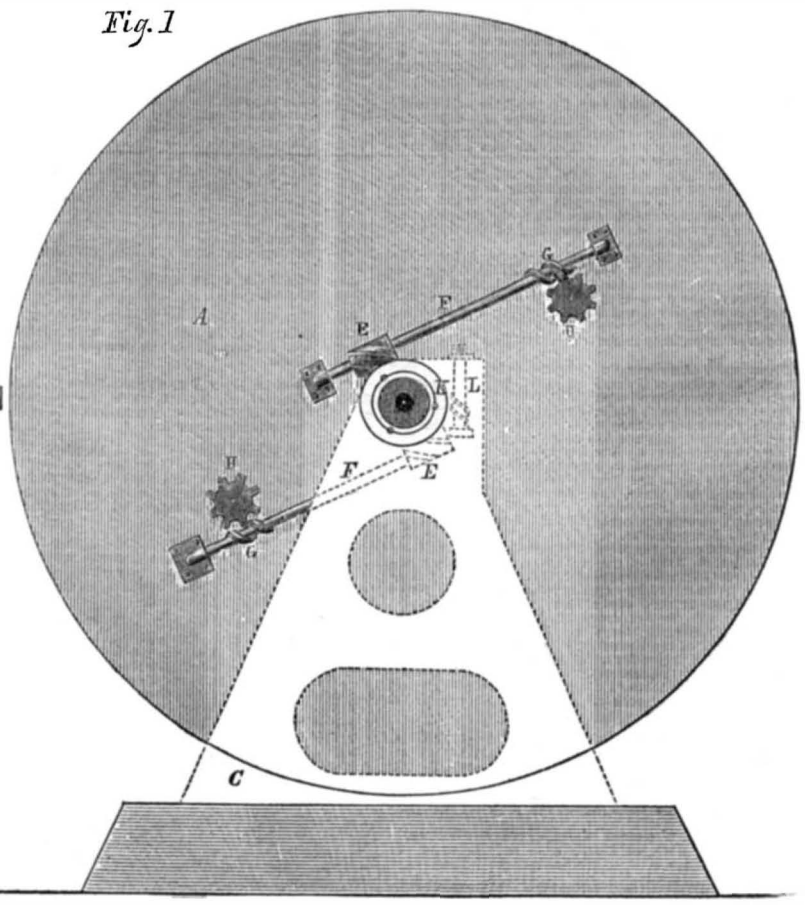


Fig. 1

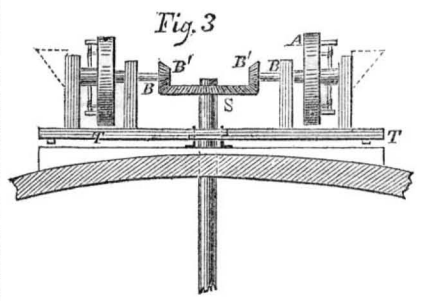


hollowed out, for the reception of the balls, as shown in fig. 2. The hollow axle, B, turns in the fixed collar, J J, firmly fastened to the support. Worm wheels E E are connected with the annular or hollow screw, D, and both fitted to turn around accurately on the collar, J J. These wheels are geared into the threads of the fixed screws, D, and G G are worms or screws gearing into the pinions, H H, as shown in this figure.

On giving a rapid rotary motion to the main wheel, the balls, being then introduced into the hollow axle at R, pass thence into the transverse chamber or channel in the main wheel. The rapid rotary motion of this wheel is thus imparted to these balls, whereby a centrifugal force is created, urging them through the channel, and projecting them therefrom with a force depending on the velocity with which the wheel is driven. Engines of this general character have been frequently proposed, and several have at different times been constructed and set in operation experimentally, but great difficulty has always been experienced in discharging the projectiles at the proper time, and in the required direction. In this machine the balls can only be discharged as they are passed out by the plugs or axles, I I. D fixed on the collar, J J, as already described, *remains stationary*, whilst the worm wheels, E E, in contact with it, are revolving around with the main wheel; hence the wheels, E, are moved one tooth, every revolution of the main wheel, and this motion is communicated to the worms, G G, and thence to the plugs or axles, I I. If we suppose each worm wheel, E, to have five teeth on it, and the small pinion on the end of the plugs to have eight teeth, it will be obvious that these plugs or axles would make *one entire* revolution for every forty revolutions made by the main wheel. Or if the machine is double-barreled, as shown in the cut, it would discharge two balls or bullets every forty revolutions. This proportion between the motion of the main wheel and the plugs, it is plain, may be varied at pleasure.

The screw L, fig. 1, is designed to act on the teeth of the wheel, K, to which is attached, as already mentioned, the screw, D. By applying a wrench, the screw, L, may be turned round, and consequently the screw, D; whereby the angle of elevation at which the balls are let off, may thus be conveniently regulated, even while the main wheel is in motion, if desired. The mode in which the horizontal projection of the balls may be varied, as shown in fig. 3, which represents a couple of the machines applied, for instance, to the deck of a steamship. A platform stands amidships, whereon the machines are to work. A A are the two battery wheels, S a shaft driven by the steam engines of the ship, B′ B′, beveled gear, whereby A A

Fig. 3



are driven. There are hoppers, as shown, for feeding the machines. The platforms, T T, which carry the machines, revolve around a collar, fitted concentrically with the center of the shaft, S, and traverse around and upon the platform, similar to the turn-table used on railroads.

The inventor believes that for the purposes of transmitting motion, as above represented, cogs may be dispensed with, and the wheels driven by the friction of the surfaces brought into contact.

There can be no doubt as to the adequate power of a steam engine when concentrated in a machine like the present to produce effects equivalent to that of gunpowder; but there are some practical difficulties in obtaining the highest velocity with the least power and friction. This point can only be determined by further research and experiment. It is found in gunnery, that the highest velocities are only required with the smallest balls or bullets, and this is urged as an important fact in favor of this machine for throwing heavy masses. According to Gregory, we find for a ball of 1 pound, with a charge of 8 ounces, that the velocity is 1,600 feet per second, very nearly; with a ball, however, of 48 lbs., with what is esteemed the proper charge of 2 lbs., we have a velocity of only 564 feet per second. Hence it will be seen that for the machine to throw a ball of 48 lbs. weight, it would require only about one-third the velocity which would be required to project a ball of only 1 lb. weight, both with the usual force. The velocity, therefore, for the heavier balls is reduced down to within practical limits.

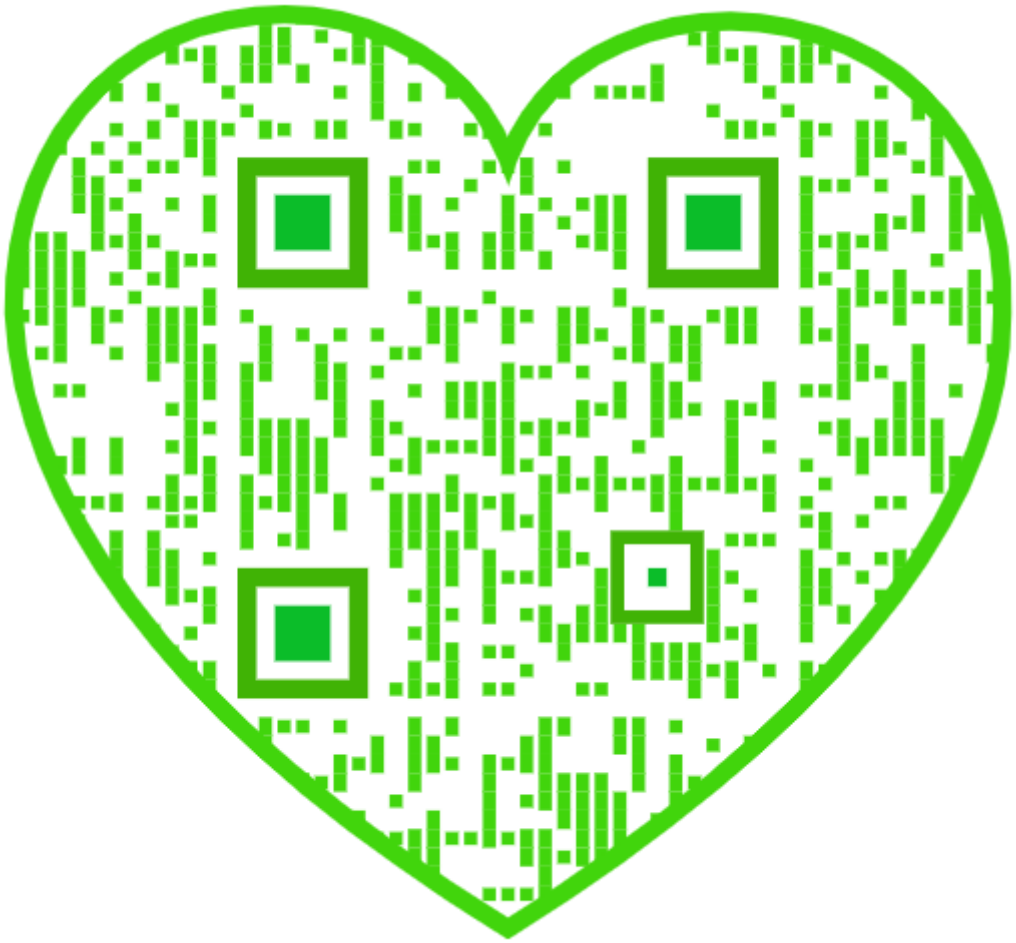
The inventor estimates cast iron to be sufficiently strong to withstand the centrifugal force in this engine, and proposes to construct the wheels 5 feet in diameter, and to give them a speed of 2,000 revolutions per minute. In case a stronger material than cast iron be required, (the modulus of strength of which he assumes at too high a figure—ten to twenty tuns per square inch of section) he considers that wrought iron, or even cast steel, might be employed for the purpose with good effect, cast steel being some ten times stronger than the same volume of cast iron, while the specific gravity is but very little greater.

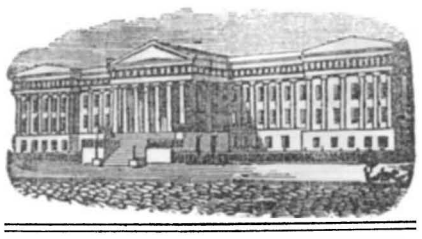
If this machine, or any other, can successfully overcome the practical difficulties heretofore experienced in this class of batteries, one or two of them, as shown in fig. 3, on the deck of a steam vessel, with the power of the steam engines to drive them, would pour the balls out in a perfect deluge. The inventor also considers that for the purpose of throwing red-hot balls or combustible and mephitic materials, they would be very effective.

For further information on this subject, address the inventor, Albert Potts, northeast corner of Third and Willow sts., Philadelphia.

Twenty thousand gallons of varnish, worth from $2 to $5 per gallon, were consumed by a fire in this city a few days since. This quantity would fill 200 hogsheads of 100 gallons each.

© 1857 SCIENTIFIC AMERICAN, INC.





[Reported officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 14, 1857.

MACHINE FOR MAKING R.R. CHAIRS—Robt. Arthur, of Richmond, Va.: I claim the use of the swages, B, constructed and operating in the manner specified, and operating in connection with the adjusting levers D, whereby uniformity in the length of the lips is secured, without reference to the length of the plate.

MACHINE FOR GAGING AND FILING SAWS—Emanuel Andrews, of Elmira, N. Y.: I am aware that adjustable clamps and rollers for supporting and pressing upon the file while acting upon the teeth of the saw have been used. Such I do not claim.

But I claim the adjustable gage, M, and guide rollers, K, arranged and operating substantially as set forth, by means of which the cutting angle or rake of the teeth shall be accurately gaged before filing, the rollers acting as stops to prevent the further cutting of the file when the proper point is attained.

I also claim the adjustable setting gage consisting of the movable jaws, N and O, combined with the files g g, or other cutting surfaces, which shall be equivalent in their operation, for the purpose of gaging the width of set which the saw is to receive, and also for dressing and finishing the points of the teeth smoothly and uniformly after being set substantially in the manner set forth.

FASTENING ARTIFICIAL TEETH—Theodore H. and James P. Bradish, of Utica, N. Y.: We do not claim to be the first inventors of attaching linings, or partial linings, to artificial teeth at the time of manufacturing, although we are not aware that any plan for doing this has ever been brought into general use in any locality.

We are aware that a plate forming a tooth lining with its edges turned inward, to form a hold within the substance of the tooth has been constructed, and the tooth molded upon this plate, thus imbedding the edges and forming a partial lined tooth. We, ourselves, are the assignees and owners of the right of doing this, patented to George E. Murray, Dec. 4, 1849; but the lining in this case does not cover the whole tooth, and cannot, and by the continuous body of metal thus embedded the substance of the tooth is divided and weakened, and is more liable to be fractured by expansion of the metal. We do not claim this method as our invention.

But we claim the construction and attachment of the linings in the manufacture of artificial teeth, by raising upon the back of the linings one or more series of separate anchors or projections, being so formed that when these anchors or projections are imbedded into the plastic material of the tooth at the time of its molding shall constitute the solid tooth and lining combined as described.

PEN AND PENCIL CASE—Edward Baptis, of Hudson, N. J.: I do not claim the employment or use of two spiral grooves placed in reverse positions, or one having a right, and the other a left thread, and so arranged as to operate simultaneously the pen and pencil slides, for spiral grooves have been previously used for this purpose.

I claim the employment of such grooves when made with a varying pitch, substantially as described, for the purpose set forth.

[This is an improvement on the pen and pencil case formerly patented by the same inventor. The object accomplished is the highly important one of reducing the necessary size of the case, making it far more portable and convenient.]

CULTIVATING PLOWS—George G. Black, of Crossinville, Ohio: I claim, in double plows, with two beams joined at the clevis and made to be adjusted to rows of crops of different widths, the rod, l, arranged between the beams, and provided with a cross bar, t, upon which the beams can vibrate when the plows are adjusted, as described.

NAIL PLATE HOLDER—Wm. H. Battell, of New Castle, Pa.: I claim a nail plate holder composed of the socket, socket head and guide, and the jaws held thereto by a ring, substantially in the manner and for the purpose set forth.

HARVESTERS—John P. Manny, of Rockford, Ill.: I claim the combination of two frames, one of which is adjustable, and can be raised or lowered at pleasure with the lifting piece, L, and platform, P, hinged to said adjustable frame, when said parts are constructed and arranged to operate in relation to each other, in the manner and for the purpose set forth.

RIGGING OF SHIPS—James E. Cole, of Brooklyn, N. Y.: I claim placing the centers of motion of the yards of a square-rigged vessel in line with each other, in the manner and for the purposes set forth.

CHURNS—Chas. H. Dana, of West Lebanon, N. H.: I do not claim as new an oscillating churn.

Neither do I claim the causing of the dasher to make more than one up and down stroke at each oscillation of the cream vessel, independent of the specific means employed.

But I claim the irregular curved pieces C, forming the undulating slot D, in combination with the slotted oscillating frame, E, and cross bar K, with friction rollers J, for giving three up and down strokes to the dasher at each oscillation of the cream vessel, as set forth.

AUTOMATIC LATHE—Alexander Edmonds, of Mount Pulaski, Ill.: I claim the combination of the rotating cutter A a, provided with a gage r, regulating the diameter of the rounds or cylinders with the nippers N and E, for forming chair stuff.

I also claim the arrangement in the tenoning machine of the regulating screw V, and cap I, with the chamfer chisel C', for the purpose set forth.

DEVICE FOR SEALING BOTTLES, CANS, &C.—Mills B. Espy, of Philadelphia, Pa.: I claim the combination of the upper plate B, having the slot g, and the two hooked projections f f, the lower plate C, having the screw hole h, and the two hooked projections f f, with the thumb screw D, and jam nut E, the same being adapted and arranged together so as to be applicable to the mouth of a bottle or jar, substantially in the manner and for the purpose set forth and described.

WASHING MACHINES—Adam Fisher of Leavenworth City, Kansas Territory: I claim the combination of the bucketed wheel A, constructed as described, with the plain surfaced rubbing wheel B, the whole constructed and arranged substantially as described.

MATTRESSES—Wm. P. Ford, of Cheneyville, La.: I do not claim broadly the use of moss as a material for stuffing bed sacks. I am also aware that floor mats composed of moss twisted into hard ropes and woven, have long been known and used, therefore I do not claim such use or manufacture of moss.

But to the best of my knowledge and belief, no mattress composed of moss made up as described, and presenting the peculiar qualities set forth was ever before known or used. My improved mattress is, therefore, a new article of manufacture.

I claim as a new article of manufacture a mattress when made in the manner described, of moss.

[This invention may prove to be one of considerable importance. The material employed is moss, of the kind used by upholsterers. The moss is spun or twisted into loose ropes, and woven. The bed is highly soft and elastic, and may be stirred, or "made up," like feathers.]

SHOT CARTRIDGE—Wm. B. Johns, of the U. S. Army: I claim the combination of the counter-sunk base piece B, copper disk D, case C, and felt disk F, as set forth.

CORN PLANTERS—Alvin Franklin, of Genoa Cross Roads, Ohio: I claim the combination of the plow box extension E, and hoe F, in the rear of the planting tube or passage, for operation together, and with an intermittent corn discharge, or seed depositing arrangement substantially as specified, for the purpose set forth.

I also claim providing the plow box extension E, with a knife or scraper n, arranged in relation to the hoe, for the purpose of clearing the latter in its back spring or stroke as shown and described

ROPE MACHINES—Ezekiel Guile, of St. Louis, Mo.: I claim the additional laying flyer F, when combined with the described machine, substantially as set forth and for the purpose specified.

I also claim the automatic stopping apparatus, when combined substantially as described.

I further claim the curvilinear dies, as shown, for the purpose specified.

PACKING OF PISTONS—George H. Hoagland, of Port Jervis, N. Y.: I claim the setting out the packing by means of a tapering mandrel C, placed in the center of the piston rod, constructed and arranged substantially as described.

PIANOFORTES—G. Henry Hulskamp, of Troy, N. Y.: I claim first, The arrangement and construction of the action of pianofortes, substantially as set forth, having the jack under hammer and springs attached to the key and moving in the same general direction with the hammer butt.

Second, I claim the use and application of the spring w, extending through the head of the under hammer, to bear against the hammer butt for the purposes described.

Third, I claim the regulating screw in the head of the the jack, or its equivalent, in the head of the under hammer, to regulate the hight of that part of the action.

Fourth, I claim the shape of the hammer butt, with its spiral spring, substantially as set forth.

Fifth, I claim the dolce harmonic attachment, constructed as specified, or its equivalent, and I claim its parts, to wit.: the interposing of a substance to touch one string only of a note, and the making of such substance to vary in hardness with the different notes of the instrument.

And sixth, I claim the corrugated spring, for the purposes specified.

CHURNS—Silas Hewit, of Seneca Falls, N. Y.: I claim the floats A, in combination with the flanges B, constructed and arranged in the manner and for the purposes set forth.

COAL TAR IN IRON FURNACES—Isaac G. Johnson, of Spuyten Duyvel, N. Y.: I claim the employment of coal tar in the air furnace, substantially in the manner and for the purposes set forth.

FLY-WHEEL TO HAND CARS—Charles T. Kipp and John Lawrenson, of New York City: We claim the arrangement of levers B, and rods C, attached to crank wheel F, for operating the fly wheel A, the whole constructed and operated as described, and for the purpose set forth.

HEMP-DRAWING MACHINES—Saml. Lownds, of Brooklyn, N. Y.: I claim the arrangement of a hemp-drawing frame, having its gills operated by guide dogs upon both sides of the frame, and attached to each alternate row of gills, substantially as described.

SEAL FOR CAR DOORS, &C.—D. W. Long, of Baltimore, Md: Though I have represented the same hasp that covers the seal as securing the doors, I do not confine my claim to this peculiar arrangement, as there may be other or additional locks for securing the door. Nor do I confine myself to the peculiar form of the hasp.

But I claim effectually securing the seals of car, or other doors, from accidental or designed injury, substantially as set forth.

CULTIVATORS—Howard Mann, of San Francisco, Cal.: I claim the arrangement of shanks g g, with rack bars i f, and segmental plates h h, in the manner and for the purposes set forth.

RAKING APPARATUS FOR HARVESTERS—John P. Manny, of Rockford, Ill.: I claim in combination with a contracting trough-shaped platform, a self-contracting and elongating rake, substantially in the manner and for the purpose described.

I also claim raising and lowering a rake operated as set forth, to cause it to preserve its relative working position with regard to the platform, as said platform is raised or lowered by means substantially such as described.

MORTISE BORING MACHINE—Hiram E. Paine, of Troy, N. Y.: I claim constructing the machine as described, so that the revolving sidewise reciprocating mortising bit thereof is moved by the machine alone endwise into the timber at, and only at, the ends of the mortise, whatever length of mortise is being cut, as set forth.

I also claim the described means used to prevent increased trembling of the mortising or boring bit, as the depth of the cutting increases.

BREASTPINS—John F. Mascher, of Philadelphia, Pa.: I claim constructing breastpins, broaches, and other ornamental fastenings for dress, &c., with a spiral catch, substantially as and for the purpose described.

FREIGHT CARS—Henry D. Mears and Wm. Houlton Jr., of Baltimore, Md.: We claim the device for sealing described, the same consisting of soft metallic disks connected by a strip or wire of harder metal as described, the whole constructed and operated substantially in the manner set forth, and applied to the purposes specified.

FREIGHT CARS—Henry D. Mears and Wm. Houlton, Jr., of Baltimore, Md.: We claim the seal described, the same consisting of a disk of soft metal having one or more holes or slots through it for the reception of the ends of a wire or metallic strip, which are confined by the compression of the disk, all constructed and operated substantially in the manner described, and applied to the purposes specified.

SELF-SETTING TRAP HOOK—Donald McLean, of Boston, Mass.: I claim the combination of the hooks B and S, constructed substantially as set forth, with the elastic cord or spiral spring E, and line L, operating as described and for the objects specified.

LOCKS—L. F. Munger, of Le Roy, N. Y.: I claim the combination of the wheels V, with the arbor, K, in the manner substantially as described, said wheels being retained in position, and imparting motion to each other in the manner substantially as set forth.

CARRIAGES—Rufus Nutting, of Randolph, Vt.: I am aware that springs have been applied so as to converge from near the extremities of the hind axle to the fifth wheel on the front axle, so as to obviate the necessity of the usual reach, and also that springs of double curvature, for producing a compensating effect, are, in themselves, not new.

But I claim the arrangement of compensating springs, substantially as described and specified, with the front and rear axles, so that while the axles are retained in their proper positions, the action of the compensating spring prevents the spreading of the axles on one side of the vehicle, and thereby tends to preserve the accurate tracking of the hind wheels.

I also claim the combination of the guard with the hinder part of the springs, substantially as set forth and for the purposes specified.

COTTON GINS—Daniel Pratt, of Prattville, Ala.: I do not claim feeding the cotton spirally to the saws, irrespective of the means employed for effecting the purpose.

But I claim the ledge e, secured or placed within the hopper or box E, as shown, so as to close the central portion of the lower end of the hopper or box, and cause the cotton, when fed into the box as described, to be fed spirally to the saws from the center of the box towards each end, for the purpose set forth.

[The outer side of the cotton box or hopper is hinged or connected by joints at its upper edge, so as to maintain its proper position by gravity, and allow the attendant to discharge the seeds by lifting it, at any time. The lower part of the box is closed in the middle but open at both ends.]

LIME KILNS—Leonard Phleger, of Philadelphia, Pa. I claim the employment in a lime kiln of a series of water cells, for supporting the limestone, arranged and operating as described.

LOCKING CYLINDRICAL DOOR BOLTS—Charles G. Page, of Washington, D. C.: I claim locking the bolt by means of the loose handles, substantially as set forth.

DRAINING MACHINE—A P. Routt, of Somerset, Va.: I claim the employment in connection with a double mold-board plow, of a heavy V-shaped or taper roller G, said roller being hung so as to run behind and between the two mold boards, and so as to be capable of revolving and adjusting itself to the different depths at which the plow may be set to cut substantially as and for the purpose set forth

[This plow is exceedingly simple, and yet well adapted or forming drains in wet, marshy lands. The improvement consists simply in arranging a V-shaped roller behind a double mold board plow, said roller being hinged to the beam so as to accommodate itself to the different depths at which the plow enters the soil.]

OIL CANS—Geo. W. and Geo. H. Simmons of Bennington, Vt.: We do not claim the interior tubes of the can. Nor do we claim generally the fastening of the air vents of an oil can to the stopper.

But we claim fastening the air vessel or tube T, to the oil tube A, and the oil tube to the stopper S, so that the whole may be removed together for the purpose of cleansing or repairs, by which means we produce a better article of manufacture than when said tubes are fastened to the can, and are not removable; the whole being made as set forth.

FLY TRAP—W. F. Shannon, of Greensboro, Ga.: I claim the invention of the box above described, and the bag and its attachment to the box, for the purposes named.

WREST-PINS FOR PIANOS—Gustav Schilling, of Hoboken, N. J.: I claim combining the heads of wrest-pins with an adjustable screw to which the string is attached, in such manner that the direction of the straining force is mathematically true in the direction of the axis of the adjustable screw by the means substantially as described and set forth.

MACHINE FOR CUTTING METAL—James Tetlow, of Salem, Mass., I would remark that I do not claim the machine or combination of levers or joints and slides for operating the cutter.

But I claim forming the cutter, C, with an obtuse angle in such a manner as to give to the surface of the plate while being cut a broad flat bearing D to rest upon, while the other cutter F is cutting through the plate, the obtuse angle of the cutter C, being the supplement of the acute angle of the plate when cut.

CENTERING MACHINE—E. F. Whiton, of West Stafford, Conn.: I claim arranging the laterally adjustable notched holders, d d, in such a manner in relation to the longitudinally adjustable spindle, C, and its pointed marker p, as to enable the ends of shafts of various sizes to be centrally marked, substantially as set forth.

LOCKS—Wm. Whiting, of Roxbury, Mass., and Henry Pickford, of Boston, Mass., We claim the combination of the slides, I, with the pawl, o, so arranged that whenever the slides are allowed to touch the tumblers, the pawl shall engage the teeth of the tumblers, and hold them stationary,

Second, Operating the slides, the bolt and the pawl, O, directly from the wrench shaft, in the manner substantially as set forth.

ADJUSTING TENON CUTTERS—Melyn Weatherington, of Springfield, O.: I do not claim boring round tenons, as this is a very common device,

But I claim the combined use of the uncut counter sunk disk, and removable rings, and the bit adjustable thereto, for the purpose of making an adjustable hollow auger, capable of boring tenons of various sizes, without splitting or dividing the stock, substantially as described.

GOVERNORS OF STEAM ENGINES, &C.—A. F. Ward of Louisville, Ky.: I claim the arrangement of the friction socket, D, the female screw socket, H, with its arms, q q', and the clutch, t, on the governor rod, f, the whole combining to operate as described, so that the female screw socket, h, may be prevented turning till the full supply of steam is given or till the steam is cut off entirely, and afterwards be caused to turn with the governor rods.

[This invention is admirably adapted to provide for the extreme variations of resistance experienced in some work, as in the operations of rolling mills. The connection between the governor and the throttle valve, or cut-off, is practically lengthened and shortened to a very considerable degree by a self-acting device as the load varies.]

BUREAU BEDSTEADS—Ethan Whitney, of Boston, Mass.: I do not claim so applying a bedstead to a wardrobe or case, as to enable the said bedstead to be turned on hinges or their equivalents, from a vertical position in the case to a horizontal position so as to project from and out of the case.

Nor do I claim when separately considered, making a bedstead in two parts hinged together or making a bedstead or part of the same, to slide into a sofa frame by means of guide grooves and projections applied to the same, as represented in the patent of A. Walker, dated July 29, 1842.

But I claim a bedstead, as constructed substantially as described, viz., with the bedstead portion made in two parts hinged together as described, and applied to the case by projections, K K, and grooves, d d, arranged as specified, in order that the said bedstead may be either folded together, and slid back into the case, or be drawn forward, and out of the case and unfolded or let down into a horizontal position, as circumstances may require.

MACHINES FOR CLEANING COTTON—L. S. Chichester, (assignor to Henry G. Evans,) of New York City: I claim the combination of the spring bars, l n, one or more series operated as shown, the hopper B rotating picker or arms d, shake screens, D H, and deflecting screens, L M, arranged substantially as and for the purpose set forth.

[This invention removes dirt, grit, sand, &c., which has become mixed with cotton before it arrives at the gin. Such substances are very detrimental both to the cotton and to the gin. The cleaning is effected by blows from spring bars, which also benefit the cotton by lightening and enlivening it]

PUMPS—Birdsill Holly, (assignor to Silsby Mynders & Shoemaker,) of Seneca Falls, N. Y. I claim the leather e, placed over the perforations, d, in the top of the base E, and the chamber, h, which is placed on the leather, said leather being provided with a flanch, f, provided with holes, 1. 2, either of which is fitted on the pin, 3, for the purpose of exposing or closing the passage, 4, substantially as described for the purpose specified.

[This pump is very simple and cheap, and provides an equivalent of a small leak through the whole, which is left open in winter, and drains the pump to prevent injury by frost. On the approach of spring the leak is stopped by simply shifting the packing leather, and the pump then retains its water.]

CULTIVATORS—Henry Schreimer, Jr., of Berrysburg, Pa.: I am aware that plows similar to mine have been patented, and also harrows: I therefore disclaim the plows separately, and the harrow separately.

But I claim in connection with the cultivator, E, E, F, F, the arrangement of the cross beams, A A' C, and the transverse beam, D, in the manner and for the purpose set forth.

LUBRICATOR—H. J Hawkins, of Mobile, Ala.: I do not claim the origination of lubricating steam engines by a stationary or movable machine, as some such method has long been in use.

I claim the general arrangement of this lubricator with its mode and manner of admitting the lubricating substances, so as to strike at once on all parts of the interior surface of the cylinder.

CUTTING TENONS—W. H. Harrison, of Philadelphia, Pa.: Being well aware that one oblique circular saw and the employment of two beveled washers between a fixed collar and the saw are claimed in the patent of Amos D. Highfield (assigned to him and myself,) I wish it to be understood that I do not claim any such device in this application.

But I do claim the use of two circular saws upon the same shaft, when their planes form an acute angle with each other, and made adjustable on their shaft, by means substantially such as set forth.

CAR SEATS—B. J. La Mothe, of New York City: I claim constructing seats with elliptical spring, c c, at the sides receiving the cushions on the upper part of said springs, when combined with the friction rollers, Q, Q, or their equivalents, whereby a lateral motion is allowed to said seat, substantially as and for the purposes specified.

I also claim constructing the back of the seat by an enclosing frame formed of the double bent rod, h, with eyes at both ends, through which eyes, and between the bends of which rod, the sustaining pipe or rod, g, passes substantially as and for the purposes specified—it being understood that I do not claim a surrounding metallic rod receiving padding to form the backs of chairs, as this has heretofore been made use of, but I am not aware that a metallic frame for receiving padding to form the backs of car seats has ever before been formed as herein specified, whereby great strength and lightness are combined, and the back adapted to resist pressure from either side.

RE-ISSUE.

WROUGHT IRON RAILROAD CHAIRS—The New York Wrought Iron Railroad Chair Company, of New York City, assignees of (by immediate transfers) Samuel S. Cox, now deceased. Patented Aug. 8, 1849. What is claimed as the invention of deceased is, First, A suitable support for a chair blank, in combination with bending levers or a bending apparatus, and a former or the equivalents thereof acting in combination substantially as specified.

Second, A drop hammer or its equivalent, in combination with bending levers, a former and a suitable support for the chair blank or their equivalents. all substantially such and acting in combination substantially in the manner set forth.

ADDITIONAL IMPROVEMENTS.

HUB BORER—John Shaerer, of Reading, Pa. Patented January 13, 1857: I claim in addition to my patent of the 13th day of January, 1857, in combination with the boring shank or shaft, the collar A, with its double flange, O O, one above and the other below the frame, C, the holes, c, and the stop E, the whole being arranged to operate in the manner and for the purpose specified.

FIREARM—F. D. Newburg, (assignor to Richd. V. De Witt,) of Albany, N. Y. Patented Aug. 12, 1856: I claim the placing of the tape priming within the chamber of the arm, D, and operating the priming by the movement of the arm through and in combination with the ratched rod and spring, n, and pawl spring, n, or their equivalents substantially as set forth in the specification.

DESIGNS.

COOKING STOVES—Jas. Maguire, Jos. A. Read and Duncan Wright, (assignors to Chas. Gilbert,) of Philadelphia, Pa.

STOVES—N. S. Vedder, of Troy, N. Y., assignor to North, Chase & North, of Philadelphia, Pa.

STOVES—S. W. Gibbs (assignor to Rathbone & Co.,) of Albany, N. Y.: Two cases.

PARLOR STOVES—E. J. Cridge, of Troy, N. Y.

COOKING STOVES—J. R. Hyde, of Troy, N. Y.

CLOCK CASES—Pietro Cinquinni, of West Meriden, Conn.

How to Fall Asleep.

The great point to be gained in order to secure sleep, is escape from that clinging, tenacious, imperious thought, which, in most cases of wakefulness, has possession of the mind. Various methods have been suggested by different authors to diffuse the thoughts. Our own method, and one which we imagine conduces most naturally to lead the mind into easy dreaming, is to imagine a journey over some familiar path, bringing successively into the mind's eye the scenery at each portion—an exercise which rarely fails of success in a tolerably short space of time.

Dr. Binn, in his "Anatomy of Sleep," describes his process as follows:—

"I turn my eyeballs as far to the right or left, or upwards or downwards, as I can without pain, and then commence rolling them slowly, with that divergence from a direct line of vision around in their sockets, and continue doing this until I fall asleep, which occurs generally within three minutes, and always within five, at most. The immediate effect of this procedure differs from that of any other of which I ever heard, to procure sleep. It not merely diverts thought into a new channel, but actually suspends it. I have endeavored innumerable times, while thus rolling my eyes, to think upon a particular subject, and even upon that which before kept me awake, but I could not As long as they were moving around, my mind was a blank. If any one doubts this, let him try the experiment for himself. Let him pause just here, and make it. I venture to assure him that if he makes it in good faith, in the manner described, the promise of 'a penny for his thoughts,' or for each of them, while the operation is in progress, will add very to his wealth."

A Novel Apiary.

The Portland *Argus* states that some unused flues in a chimney in an elegant mansion near that city were recently found to be nearly filled with bees and honey-comb. The flues of the chimney had never been used; they were plastered smooth inside, and were perfectly dark, a stone having been placed upon the top of each flue. The bees had descended the adjoining flues and found small holes about ten inches from the top of the chimney, leading into the closed flues, and through these holes they had made their way in and out. They have, as is supposed, occupied these places for three years, having been kept warm in the winter by the heat from the adjoining flues.

© 1857 SCIENTIFIC AMERICAN, INC.

Live Fences.

MESSRS. EDITORS—In your really scientific paper of Juue 27, I find an article on the above subject which points in the right direction; but I consider the European hawthorn a very hardy shrub, and one which will bear the severity of a very cold winter. I have chanced to meet with an American hawthorn bearing the seed, a specimen of which I send you with this letter. The following is the method in which the hawthorn is cultivated in Europe :—

The berries are collected, when ripe, and buried a few feet below the surface of the earth, and allowed to remain there during the space of eighteen months. They are then taken up and sown in beds in the month of April. When the plants are one year old, they should be transplanted into nursery beds, and allowed to remain until they are three years old. They will then have attained hardihood enough to withstand the severity of the winter frosts of any climate.

Wooden fences are good, so far as a fence is concerned; but what is more beautiful and picturesque than a live fence. It is cheering as well as profitable. The hawthorn blossom emits a fragrance far superior to the bean or apple, and is one of the first blossoms of spring.

New York, July, 1857. J. HANNA.

MESSRS. EDITORS—On my father's farm in Oxford township, Pa., there is an osage orange fence, planted about five years ago in the usual manner. That fence has flourished, and not a single plant has died, notwithstanding the severity of last winter and the winter before. The winter of 1855–6 was, I think, as severe a season as we commonly have, but the plants lived, and were completely uninjured. The hedge runs in a line about east and west. The plants were set as an experiment, and have succeeded to our complete satisfaction. Another fact which I think is not generally known, is this: if, when the fence is trimmed, the "clippings" are stuck into the ground, at least eight out of every ten will grow, which does away with the expense of either rearing or buying the young plants. A farmer may thus provide himself with a durable and ornamental fence with but the labor of pushing the clippings into the ground wherever he may want his fence.

Philadelphia, Pa., July, 1857. J. D.

Four Rainbows seen at one Time.

MESSRS. EDITORS—A very beautiful and singular phenomenon was observed at Ashwood, Maury county, Tenn., on July 3d, at 5 o'clock, P. M. A gorgeous rainbow spanned the heavens with its magnificent colors; immediately beneath it were two others, but little inferior in brightness, while above the principal one, and at some distance from it, was a fourth, equally bright with the two lesser. The arches were perfect in them all, and were seen about seven or eight minutes.

C. F. W.

Learning without a Teacher.

A forthcoming number of Wiessenborn's *Engineering Illustrated*, presents the following valuable suggestions, which we hope to see extensively diffused throughout the whole army of young mechanics and workmen throughout the country :

First in practical importance, let, if possible, two or three unite, or rather pursue a study cotemporaneously. Let them discuss the principal points during the intervals of labor; and, although it will generally follow that one is so much in advance of his neighbor, as to become a teacher rather than a fellow student, yet the exercise of comparing notes, even in this manner, will be profitable to both. It will certainly benefit the indolent man, and will refresh the memory and confirm the opinions of the more advanced. Do not attempt to unite more than three, as the chances of confusion and final abandonment of the enterprise are increased by the addition of each new member. But all this depends, after all, on the force of the student. There is a quality, so termed, almost or quite as important in real life as intellectual development. If you will look abroad among your acquaintances, particularly those filling, with credit, important and responsible situations, a close analysis will show you that they derive their best qualities as much from force as from sense. If you have force enough, when fully summoned, to propel alone, spend no time in soliciting companions. There are always those who will be pupils, if no labor is required. Explain to such occasionally some prominent point in your newly acquired knowledge. If it does not benefit the listeners it is no fault of yours. The improvement of the lecturer is the main point, and you will frequently find much truth in the very obstinacy with which they will object to the propositions advanced.

Every text book is, or should be, adapted to a certain progress in the learner. There are generally several books on the same subject, some very simple, and others very deep. You will very likely—procuring your books by accident or chance—find points difficult to master. Overcome this by procuring, if possible, two or three different text books. Whether the subject be mathematics or chemistry, electricity or law, hydraulics or book-keeping, two or three authorities will settle every difficulty. The explanations of one writer will cover the "joints" left by the other. And if one book is very old and musty, both covers eaten off by mice, and the whole stained as if fresh from the slop pail, skim through what it has to say, after you have faithfully studied a section of the more modern one. Two books are sufficient—four are too many.

Morning is the best time for close, deep thinking; evening best for charging the mind. In the long days with warm mornings arise at five, and study mathematics; practice drawing from supper to dusk; then spend the remaining hour in general social enjoyment. But if you wish simply to remember an array of terms, or acquire simple word-knowledge—a matter of great importance in chemistry—read over what you wish to fix in your memory at night, just before retiring. In short, go to work every morning, full of new and strong ideas; retire at night with new words stamped in the memory. By following the suggestions we have advanced, you may, without losing an hour's wages, or diminishing your usefulness in the shop, progress about half as rapidly as you would were you at a popular school, and devoting your whole time to study.

Salt.

Common sea salt (chloride of sodium) is an article the importance of which in its action as a purifier in some chemical processes has been but recently known extensively. On our last page will be found the details of a process for purifying and rendering valuable an oily discharge from the earth in which salt will be observed to play an important part. Scores of processes affecting the preparation or rectification of various important materials involve the employment of this cheap chemical with other ingredients, under intense heat, and one of the processes for making steel, which has lately attracted considerable attention, consists in purifying scrap iron by salt and carbonizing it with the same materials used for scores of years in the simple "case-hardening" operation.

According to some of the foreign journals, the addition of salt to the materials in the smelting and the puddling furnace, has been attended with very beneficial results in the quality of the iron produced. But all these uses are at present trifling, compared to the immense quantities of this material used in the preservation and seasoning of food.

The amount of salt consumed in this country (for various uses) including the salting of hay, &c., for animals, the salt inserted between the timbers of vessels to preserve the wood, and the like, is about sixty pounds to each inhabitant. There are about twelve million bushels of salt manufactured within our limits per annum, and about fifteen million bushels imported. The salt is manufactured partly by boiling and partly by evaporating in the sun. The cost of manufacturing by these processes are about equal, and the product is of about equal value, pound for pound; but the solar salt weighs about seventy pounds to the bushel, while the boiled salt weighs about fifty-six pounds to the bushel, varying, however, according to the position of the kettles, to a weight considerably above and also considerably below the standard. Onondaga County, in this State, furnishes about half of the whole quantity manufactured in the United States. The brine for these works is obtained altogether from springs, and the salt is reduced to the crystalline form almost exclusively by boiling. The amount manufactured at the solar works of Onondaga in 1856, was about half a million bushels. The quantity manufactured in kettles in that county in the same time was five and a half millions bushels.

A recent letter from S. Hotaling, a prominent salt merchant of this city, in answer to one from a Committee of the British Parliament, on the salt trade of our country, after presenting much of the statistical information already given, describes a salt *block* at Onondaga, of the largest size, as made of brick about twelve to fifteen feet wide, four to five feet high, and forming two parallel arches, extending the whole length of the block. Over, and within the top of these arches, are placed common cast iron kettles holding about fifty to seventy gallons of brine, placed close together in two rows the whole length of the arches. A fire built in the mouth of the arches passes under each kettle into a chimney, built generally fifty to 150 feet high, averaging from fifty to seventy kettles in each block. A single block with one row of kettles is about half of this width.

Any improvement in the manufacture of salt which could cheapen its production only by a very small per centage, would be an invention of no ordinary importance; and we think the field, although the subject is occasionally dabbled in with various degrees of success, is much less the scene of competition among inventors than many others of less magnitude.

The "Secret" Cancer Cure.

Much has been written about Dr. Fell's secret, now being employed by the surgeons at the Middlesex Hospital, London, where the unfortunate American sculptor Crawford is now under treatment for this dread affliction. Dr. Fell's treatment is described in a late medical work as follows :—

"In the first instance, the skin over the tumor is removed by some liquid caustic—nitric acid. The thus exposed tumor is then covered with a layer of an ordinary caustic, chloride of zinc, spread on linen. This creates a superficial slough. This slough is then *scored to a certain depth by several incisions of the knife; into these furrows strips of linen covered with the caustic are inserted.* In this way the tumor is destroyed still deeper. The incisions are gradually extended in depth from time to time, fresh caustic being introduced into them at each dressing, till in this way the whole tumor is *seriatim* converted into one large eschar, which separates by a surface of demarcation, according to the ordinary principles of surgery."

The constitutional treatment which has been affirmed to eradicate from the system the tendency again to originate cancers, is affirmed by the same authority to consist in the internal administration of iodide of arsenic.

The Food Question.

The *Tribune* a few months ago published an article headed "What can be Done on Ten Cents a Day," in which it set forth how a poor woman lived and supported some two or three little ones on steady work at ten cents per diem. The following, however, which we find in an exchange, dissertating on the benefits of simple diet, rather throws the ten cent story in the shade. It purports to be the result of some experiments made in a prison, where it was found that ten persons gained four pounds of flesh each in two months, eating for breakfast eight ounces of oatmeal, made into porridge, with a pint of buttermilk; for dinner three pounds of boiled potatoes with salt; for supper, five ounces of oatmeal porridge with one pint of buttermilk, which cost twopence three farthings per day. Ten others gained three and a half pounds of flesh, eating six pounds of boiled potatoes daily, taking nothing with them but salt. Ten others ate the same amount of porridge and buttermilk, without the potatoes as the first ten, but for dinner had soup; they lost one and a quarter pounds of flesh each—and twenty others, who had less diminished in size likewise.

From this it would seem that potatoes were a better diet than smaller quanties of animal food, at least for persons in confinement. The meat eaters, if they had been allowed ordinary exercise, might have exhibited a very different result.

White Mountain Carriage Road.

A substantial and evenly graded road, sixteen feet wide, is being constructed to the top of Mount Washington, in New Hampshire, by a company organised for the purpose. It is a portion of the plan to have a large hotel and observatory at the summit of the mountain, 6,285 feet above the sea. The road will, when finished, be 8 1-4 miles long, and the grade will be lighter than that on many hills in the ordinary country roads. There is an almost uniform inclination from the commencement to the top, and very efficient brakes are provided to relieve the horses from the labor of holding back in descending. The road is reported to be now finished to within about one mile of the top.

The White Mountains have, for many years, been considered a most attractive point for a summer journey, and Mount Washington, the highest, is always the Mecca principally visited in these pilgrimages. The principal object of the White Mountain road is to lessen the fatigue of the ascent of Mount Washington, which, on horseback over the old bridle paths, is too severe for any but the well and robust. A large and beautiful model of the omnibuses employed was exhibited in the Crystal Palace in this city when the company was first commencing its operations in 1854. They are capable of containing twelve persons, and are so constructed that in ascending or descending the body of the vehicle is kept on a level, and the visitors can, without suffering from exposure to sun or rain, fearlessly enjoy the grand and beautiful scenery which is constantly to be seen during their ride. The last mile of the road is intended to entirely encircle the upper cone of the mountain, where the whole panorama of mountains, forests, lakes, and the distant ocean can be taken in at a glance. This ride is now to be enjoyed almost to the summit.

Gas Manufacture.

The following is the relative yield of a tun of gas coal and a cord of wood. A tun of the best English cannel coal of 2240 lbs. yields :—

1 chaldron of coke. . . .	1,494	lbs.
12 gallons of tar.	135	"
10 gallons of ammoniacal liquor.	100	"
9,500 cubic feet of gas. . . .	291	"
Loss.	220	"
Total.	2,240	lbs.

Weight of a cord of the different woods used for gasmaking —Walnut, 4400 lbs.; hickory, 3700; oak, 2500 to 3900; maple, 2400 to 2900; beach, 3000; birch, 3100; pine from 1700 to 2800. A cord of pine wood of 2700 lbs, yields :—

60 to 65 bushels charcoal. . .	640	lbs.
Vegetable tar.	85	"
Pyroligneous acid.	850	"
15,000 cubic feet of gas. . . .	450	"
Loss, by humidity of the wood, &c.	675	"
Total.	2,700	lbs.

L. R. BREISACH.

The Great Eastern—Excursion.

The *Canadian Railway Guide* says that the Great Eastern steamship will positively sail from Holyhead Harbor—her point of departure from England—for Portland, in April, next year, and that tourist tickets will be issued by her for a five weeks' trip to Quebec, Chicago, St. Louis, Baltimore, Washington, New York, Boston, and back to Portland, in time to return in her. The price of the tickets, it is now supposed, will be $500, and the time she will lie in Portland will be five weeks.

The New York and Erie Railroad Company has reduced the fare on through passengers within a few days past, and we would recommend this route as not only the cheapest, but the shortest and most pleasant.

© 1857 SCIENTIFIC AMERICAN, INC.

New Inventions.

Artificial Hair.

A mode of treating horns is talked of, by means of which the clippings and waste may be used in the manufacture of artificial hair, as a useful substitute for natural hair. It is stated that the horn has but to be rolled into bands and then cut into threads, and that hair thus prepared may be used advantageously instead of horse, bull or cow's hair, for a variety of purposes in the mechanic arts. Horn is analogous if not identical in character with hair, and the transformation may be practicable.

Flouring Extraordinary.

A French chemist of some note professes to have discovered a cheap and practicable method of disintegrating wheat and other grain by chemical instead of mechanical means, so as to produce fine and admirable flour without a mill of any kind. A commission has, it is stated in a late French paper, been appointed to examine the nature of the flour chemically, so as to ascertain its character, as compared with flour which has been produced by crushing and grinding.

Improved Cork Cutter.

The machine represented in the accompanying engravings is the invention of Edward Conroy, of South Boston, and is secured by letters patent, dated the 16th of June last. Its object is the rapid manufacture of corks or bungs, and the like conical forms, and it accomplishes the object with a perfection rarely excelled in any art.

The material is supplied in sticks or sheets of a thickness equivalent to the length of the bung to be produced. The action consists in rapidly rotating two cutters, which remove the material in an annular space around the same, leaving the manufactured article untouched in its center. It is easy to conceive how this operation can produce perfectly *cylindrical* shapes, and, in fact, a somewhat similar tool has long been employed for the manufacture of deck-plugs, and the like, but in this machine the cutters are expanded, so as to produce a perfect conical form. The peculiarity consists in the means for effecting this.

A is the frame of the machine, and B the driving pulley. A short belt leads from B to C, which latter is a smaller pulley on another shaft. On the same shaft with C is mounted the larger pulley, D. This latter pulley carries a light belt, which, running quickly, gives a very rapid motion to the small horizontal pulley, E, mounted on the vertical arbor, F. There may be two or more of the vertical arbors, F, and a corresponding number of light belts to convey the motion thereto from the pulley, D. Fig. 2 represents a plan view of this portion of the apparatus, showing three of these arbors, which is the number preferred in practice. Each of the arbors, F, are mounted in suitable bearings, capable of lubrication, and not allowing a vertical motion. As the three are similar each to the others, a description of one will suffice for the whole.

The arbor, F, is split or slotted from its lower extremity upwards, nearly to the lower bearing. A broad flange, F′, is provided on the lower extremity, which is also slotted or divided nearly across its face in the plane with the corresponding opening in the body of the arbor, but leaving a portion of metal at the periphery of the flange, F′, to strengthen and stiffen the whole. This construction is well represented in fig. 3, which is a view of M, and its attachments, as it would be seen looking upwards from below. G is a polished rod of smaller diameter, and fitted to play freely up and down in a hole bored in the axis of F. G is impelled downwards by a coiled spring, represented at its head, and has a smooth step or flange at its lower extremity, which presses on the bung or cork while being cut. H is a flat plate fixed transversely in G, edge uppermost, like a cutter key. Its ends are beveled precisely to the inclination which it is desired to give the bung, or article being cut. I is a ring fitting loosely around M, and J J are stout springs fixed on I, which press against the outer surfaces of the two cutters, V V, and keep them in tight contact with the inclined ends of H.

CONROY'S CORK CUTTER.

Fig. 1

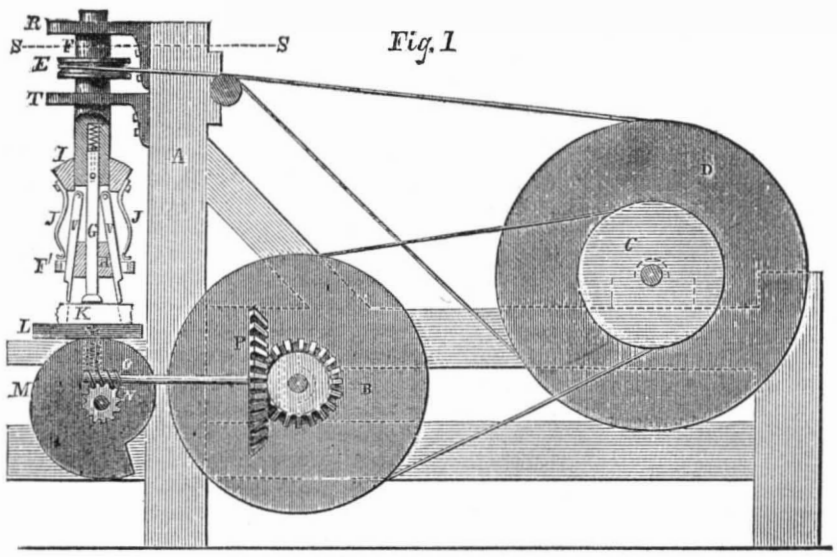
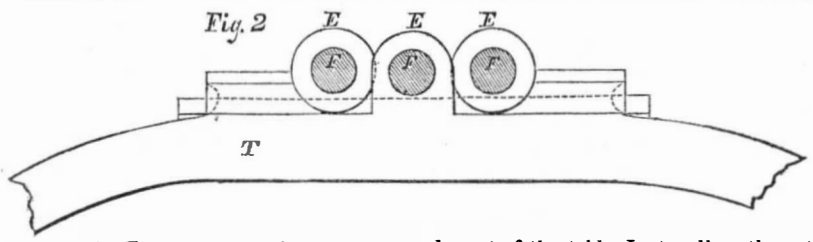


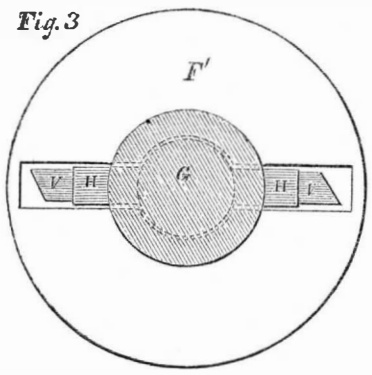
Fig. 2



represented. These slots are of a length equal to, or greater than, the greatest length of any bung or cork to be cut. K is the material to be worked. L is a table, on which K is supported, and which is carried in guides, so as to be capable of a vertical motion. M is a cam wheel. N is a worm wheel on the same shaft with M, which is acted on by the endless screw, O, which endless screw, in turn, receives a slow rotary motion from the bevel gear, P, as represented. The effect is to alternately raise and lower the table, L, and consequently the cork, or material to be cut.

It will be observed that the arbor, F, rotates rapidly at a uniform level, and that the cutters, V, are mounted in the slot represented and carried loosely on slight pins in notches or horizontal slots at their upper extremities, so that their points are ready to cut any material presented to them by the elevation of the table. The inside rod, G, is held down only by its slight coiled spring. It consequently rests lightly on the top of the cork, and rises therewith, as the table, L, is elevated, carrying with it the transverse plate, H, and consequently wedging open or forcing asunder the cutters, V, to precisely the right extent to induce them to cut out a form perfectly conical. The springs, J, which hold the cutters, V, in tight contact with the inclined sides of the piece, H, are attached to the ring, I, and consequently rising with the rod, G, maintain their constant pressure at the right point, opposite the inclined sides of H. The loose hinges at the upper extremities of V are such as allow a slight motion outwards from the center of M, in obedience to the wedging force of H when it rises, and allow its return in obedience to the tension of the springs, J, whenever the table descends. At each descent of the table the rod G, and consequently the inclined piece, H, descends, and all the parts assume their original position.

Fig. 3



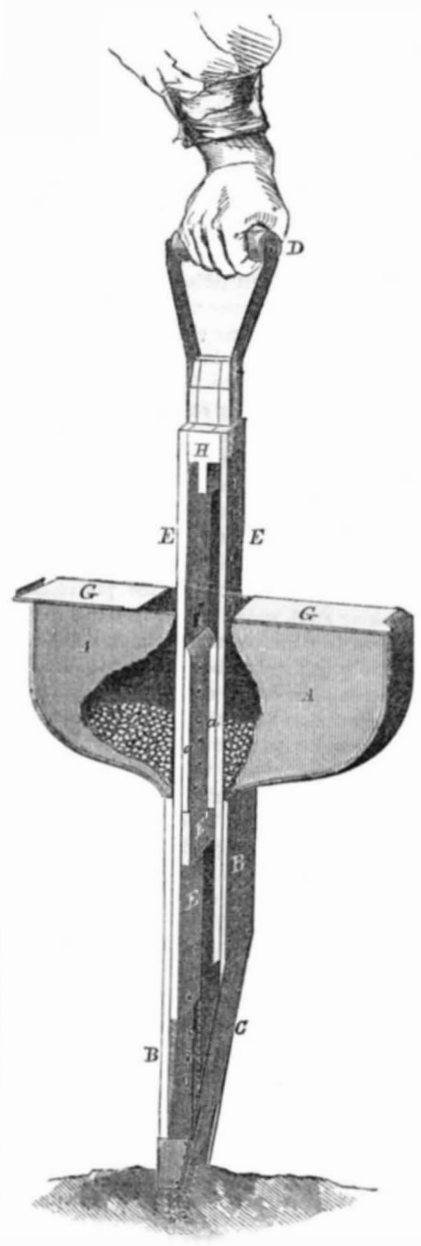
The operation is very rapid, and the waste of material is comparatively very slight. The cork, K, is held and guided by the hand, and is moved to one side sufficiently at each descent of the table, L, to allow the cutters to act on clear material at each operation.

The ring, I, is supported at two opposite points by light pins, which project from the side of G through slots in the sides of M, as

For further information the patentee may be addressed at 94 1-2 Utica street, Boston.

Decker's Corn and Pumpkin Seed Planter.

The inventor of the planter here illustrated has developed a machine admirably adapted to the planting of a uniform quantity of different kinds of seeds in the same hill, as when corn and beans or pumpkins are to grow together as also to the depositing of any desired small quantity of fertilizer, such as gypsum or the like, with a single variety of seeds. Provision is also made against a possibility of the interior conducting passage becoming clogged, an event which sometimes occurs, especially when the seeds have been soaked, and thus made somewhat adhesive.



A A′ represents two boxes of suitable size and form, and B a rectangular spout attached thereto, represented with the whole of one side removed to show the interior. There are two partitions fixed in A A′, as shown by *a a*. The lower end of B is wedge-shaped, and is closed by a metallic plate, C, which is secured to B, as represented, and stands obliquely across the passage, so that it stops the descent of the seeds. It is elastic, however, and allows itself to be thrust aside by any sufficient force.

D is the handle by which the machine is grasped. E F′ are slides attached thereto, the former being longest, and both running easily through corresponding passages existing in the box and spout as represented. In each of these slides is an opening, the size of which may be increased or diminished in the ordinary manner by adjustable pieces, F. The lower extremity of the longest slide, E, is shod with iron or with hard wood, to enable it to endure repeated plunges in stony or other hard earth, and a small piece, E′ is secured on the inner face, which by contact with *a* serves as a stop to prevent the further rise of the handle, and enable it to lift the machine from the earth to be transferred to another spot. The dotted line at the lower portion of the figure shows the position of the slide, E, when depressed by the hand.

After filling the boxes, A A, with seeds, or with seeds and fertilizing materials, (operations easily performed by removing the slides G G,) it is simply necessary to place it on the earth and depress the handle D. Each descent forces into the soil the seeds previously retained by B, and allows the openings in E F to be again filled with seed. Each rise of the handle of course raises E F, and discharges the contents of the cavities into the central channel, to be forced into the earth at the next descent. At each plunge, the tongue H enters the central opening between the fixed partitions, *a a*, and ensures the freedom of this space from liability to clogging. This planter was patented April 21, 1857.

For further information address the inventor, John Decker, Sparta, N. J., who has county and State rights for sale.

Inventors have Sunshine as well as Shade.

We do not intend to lumber our columns with matters that may be regarded as of a private nature with those who honor us with their confidence in prosecuting their applications for Letters Patent, but we cannot forego the pleasure of presenting the annexed extracts from letters received by the same mail from two of our clients. The first is from an intelligent lawyer residing in Illinois. He says:—

"I was indeed surprised and exceedingly well pleased at the announcement of your success in the prosecution of my application for a patent. And as attorneys generally feel some interest in the success of their clients, perhaps it would not be uninteresting to you to know that I have made sale of an undivided half interest in my patent for $5,000, and the purchaser furnishes all the capital and other requisites for a good business, and for disposing of rights; but this, of course, is is a client's secret, that may, or may not, interest his attorneys; however that may be, *he* deems it a very lucky 'hit' for a *pettifogger in moderate circumstances*, owing in the main to the indefatigable zeal and unsurpassed ability of his attorneys."

The other correspondent remarks that:—"The prompt manner in which you did our business deserves the highest commendation. The invention for which you procured a patent, has been tried, and it works 'tip top.' We have already been offered $7,000 for one-third of it."

The Great Telegraph.

The *Niagara* was, on the 29th June, commencing to receive the first installment of the cable from a vessel alongside. The second vessel was to be laid alongside on the 31st. These two lighters will contain 750 miles; which will be put on board at the rate of about 100 miles per day.

© 1857 SCIENTIFIC AMERICAN, INC.

Scientific American.

NEW YORK, JULY 25, 1857.

Steam on Canals.

The motive power to impel our canal boats is a subject liable to be neglected under the general impression that canals are antiquated and declining institutions; but the fact that for high speeds, wheels running on iron rails offer far the most desirable means of transportation, by no means proves that the great bulk of our regular internal freighting business is not, and will not continue to be, moved with a moderate speed, at a far less cost on canals. The Erie Canal is being enlarged to facilitate the communication between the east and west. It was formerly forty feet wide, with a depth of only about four feet of water; the enlarged canal will be at least seventy feet wide, with a depth of seven feet. The boats navigating it will be some ninety-five feet long, seventeen and a half wide, and will draw some five feet of water when loaded.

It is clear that the problem of applying steam power to these vessels is entirely different from that of propelling the smaller canal boats, heretofore employed, by such an agency. The old boats are somewhat smaller, and on that account less susceptible of carrying steam apparatus with all its complications and expense; but the main advantage of the new *regime* for steam engineering lies in the increased ratio of the canal to the boat, which allows the power to act on the water almost as if on a river. The objections anciently urged that the agitation would damage the banks of the canal, have been proved to be of little weight, and it may safely be assumed that what remains of this objection will be effectually overcome the moment steam is made to establish its supremacy.

Canals worked by horse-power do not, in economy, compare at all favorably with transportation on natural water courses and basins where steam is employed. McAlpine, the State Engineer's, researches show that the absolute cost of moving one ton of goods one mile on several of our great routes, is about as follows: five mills on the lakes, six mills on the lower Missisippi, seven mills on the Ohio, eight mills on the Hudson, nine mills on the Upper Missisippi, eleven mills on the Erie Canal, and from twenty-seven to thirty or forty mills on our various long lines of railroad. The results thus reduced and contrasted together, serve to show in a very strong light the great disparity in cost between railroad and other steam transportation, even with all the modern improvements in the former; but are presented chiefly to show the disadvantage of horse propulsion, as compared with the power employed on the great lakes and rivers.

G. Parker, of Norfolk, Va., the patentee of a "wave queller," or adjustable platform, behind a boat, to allay the agitation due to an ordinary paddle, has worked a wheel successfully in the center of boats, or rather in forked boats, hulls with single bows and double sterns. The floats of his paddle wheels do not project below the bottoms of the boats, but urge a current of water backward between the two sterns, which current is supplied by the constant rise of water from below. It is difficult to see the advantage of this construction over that of the twin boats—a wheel between two hulls—as formerly used on some of the ferries in this city and elsewere; but Mr. P.'s system seems to have established the practicability of steaming on canals to such an extent that without any sensible injury to the canals, trains of vessels and barges, with aggregate cargoes of 900 tuns, have been towed during the last four years through one canal, at a speed of three miles an hour, by one tug working about 35 horse power. This tug draws only two feet six inches water, has two high-pressure engines and one locomotive tubular boiler, with a wheel 12 feet diameter, 6 feet face and 15 inches dip—not dropping as low as the bottom of the boat by fifteen inches. It makes, with this heavy tow, fourteen revolutions per minute, and consumes one-eleventh of a cord of pine wood per mile. Mr. P. reports that these boats have made eleven miles per hour when running without a tow. He holds that the true way of applying steam on canals is to concentrate the motive power in one large machine, instead of distributing it into many small ones, and take a great load in tow, moving with a very moderate speed.

It is evident that there is a great field for experiments, inventions and enterprise, in the adaption of steam power to canal purposes. All will agree that horses and mules must probably be always used at points where locks are plenty, but on the long levels which exist in every profitably worked canal, and especially on those of as large section and worked so fully up to its capacity as the Erie is destined to be, the superior economy of steam must compel its adoption in some form.

The National Hotel Disease.

We have on several occasions presented facts as they successively appeared relating to the endemic at the National Hotel, at Washington, last winter, and have remarked on the obviously great importance of a thorough understanding of its cause or causes, if possible. It is important to know how far slight exhalations in the atmosphere may affect health, and cases are very rarely presented so important in themselves as the one in question. The official report of the section of the New York Academy of Medicine on Theory and Practice and Medical Pathology, presented to that body at their last meeting a report in which they unanimously adopted the "foul air" theory. They set forth that the source was solely a poisonous atmosphere, probably engendered in the receptacles for offal and other filth, under the building or adjacent thereto, in the sewers, &c., these having been obstructed by ice or otherwise by neglect, until the accumulation of foul air and noxious gases involved the atmosphere in and around the building, and, as in other cases of malarial exhalation, severely and dangerously affecting its inmates.

The foul air, the report presents, is the one common cause, which exposed all who inhaled it to a predisposition to the malady, which itself was modified in individual cases by previous health, and developed with greater or less promptness and severity by excesses, or indiscretions in diet, drinks, exposure, &c., either of which might have been harmlessly indulged but for the universal predisposition induced by the atmospheric poison. And, in like manner, even the predisposition, as in other cases, was not followed by an attack in all such, because no exciting cause was applied of sufficient potency. And again, many who received this predisposition had no symptom of the malady until days or weeks after they had left the atmosphere of Washington and returned to their homes. Then, under some exciting cause, the disease was developed, their predisposition having remained latent meanwhile. These cases the report contends have been sufficiently numerous all over the country, and so well characterized as to be identified as originating at Washington by unequivocal pathognomic symptoms.

This view of the subject is unanimously believed to explain many of the circumstances reported by authority as marking the endemic, and which are wholly inconsistent with any theory of mineral poison. For example, while some persons sickened after a single meal, or a single drink taken at the bar, there were many others who ate, drank and slept exclusively in the hotel, throughout the whole endemic, without a single symptom. There were, besides, numbers who suffered an attack who neither ate nor drank in the house, but only visited it, or mayhap slept there. Yet it is remarkable that no case of the disease is alleged by anybody in which the patient had not been in the hotel and inhaled the air. This common cause, the poisoned atmosphere, having been present in all cases, while none of the other causes are known to have been present in many, and all are known to be absent in others, seems to render the conclusion rational and philosophical. And as "it is illogical to seek for more causes for any effect than are necessary for its production," the physicians signing the report are not willing to admit any other poison than that which the foul air of the hotel furnished as the common cause of all the endemic visitation which has been suffered by our Washington neighbors; and they commend to the civic authorities there and everywhere the sanitary lesson taught by this pestilential endemic.

Let none of them henceforth ignore the facts here exemplified, and at whatever season of the year filth of any kind is allowed to accumulate to an extent sufficient to pollute the atmosphere of any inhabited house, the health and lives are endangered, not merely of its inmates, but of its neighborhood, by the privation of pure air for lack of ventilation, no less than by the noxious and poisonous quality of the infected atmosphere itself.

Effect of the Increase of Gold.

M. Levasseur, a statistical writer in the *Revue Cotemporaine*, presents a long and able article on the general rise in price of all marketable commodities, due to the influx of precious metal from California and Australia. He holds that the rise has been favorable both to the merchant and the agriculturist, but that salaries do not increase in proportion to the price of provisions, consequently the rise has been detrimental to those who live upon fixed salaries; and in general those who live upon fixed incomes, daily become poorer, or at least do not accumulate property as rapidly as they would had not this rise occurred.

As a set-off to this evil, the author remarks upon the benefits arising from an increased influx of gold, and shows that, although in theory an article of commerce might be expected to rise in price exactly in proportion to the increase of the circulating medium, such is not practically the case, because this proportional rise meets with its check in the stimulus given to production by the increasing demand consequent upon a greater abundance of means.

The difference between the influx of the precious metal and the amount of rise which it has produced, therefore, constitutes a real increase in public wealth. Thus in England, deducting the effects of the scarcity, which are transitory, the largest rise does not exceed twenty-five per cent. In France, where the effects of bad harvests have been most severely felt, and may be stated at seventy-five per cent, the rise attributable to the influx of gold is also limited to twenty-five per cent. Now the influx of gold has, he holds, been upwards of fifty per cent; therefore an addition has been made to the permanent wealth of the country of at least one-half of the new amount of gold introduced.

Whether, and at what period, the civilized world will be saturated with the precious metal, M. Levasseur does not undertake to decide, but he thinks that that period is still far distant, and that the activity of our manufactures, the immense increase of our commercial intercourse, and the civilization which, through the instrumentality of gold, has so lately sprung up in California and Australia, will enable us, for many years to come, to absorb the produce of the gold fields without being made sensible of any material depreciation of the currency.

The production of gold appears inexhaustible at present; but, on the other hand, Humboldt has distinctly predicted, from personal observation and positive scientific data, that a day will come when the silver mines of America will be worked at a great profit. The production of silver depends on that of mercury. What if new mines of that metal, hitherto unsuspected, were shortly discovered? Since the discovery of mines of mercury in California, the price of that substance has fallen more than fifty per cent, and we have no positive assurance that the increase and consequent cheapening of silver may not be ultimately as great as that of gold.

The Beef Question.

The waste arising from the present practice of killing fine beeves on the Plains of South America, for their skins alone, is sufficient to induce a considerable effort to avoid it, and render the flesh of these thousands of animals available in the markets of our sea-board. A scheme which has recently received considerable attention is that of transporting the animals alive on swift propellers adapted to the trade, and as the cattle could be bought on the shore at the northernmost ports in South America for from $1 to $3 per head, and freighted to New York at a profit for from $10 to $15 more, the undertaking appeared quite promising. But an Indiana paper overthrows this scheme, and compels a return to the pastures of the west alone for beef, by showing that the cattle raised upon the Savannas of Venezuela never eat hay, nor can they be made to eat it by any degree of hunger; they are frightened at the sight of an ear of corn, nor will they drink water except from a "babbling brook." They will die of thirst and starvation before they will touch either on board vessel. The attempt to overcome these difficulties with the wild cattle in the bordering States of Mexico and in Texas, it appears, have proven they are not transportable in any voyages longer than they can be kept without food or water. Cannot the meat be imported at a profit in a salted or dried form, or better under some of the patent systems of excluding destructive influences? Where is "Mr. Marle, of Paris," who exhibited meats covered with a coating of what resembled glue, in the Crystal Palace, last autumn? Beef-steaks worth 18 cents a pound at wholesale in New York, are decaying in the fields at Venezuela, and there seems to be a fine opportunity for some operations in this matter on a large scale.

Crossing of Railroad Tracks.

The Court of Appeals, New York, lays it down as a rule of law that an individual on approaching a railroad track is bound to look if a train is approaching. It holds that railroads are among the best improvements of the great age of progress, and their permanent affairs are not to be postponed to the concerns of individuals. It holds that no one has a right to cross a railroad track without first taking every precaution to safety. The same reason that holds railroad companies to the strictest responsibility to the passengers, imposes upon every one who crosses the track of these great public thoroughfares, more than ordinary care not to jeopardize the lives of those who are availing themselves of the benefit of this great modern improvement in the mode of traveling.

This evidently refers to the danger of injury to the train as well as the carriage on the highway, in case of a collision between the moving masses, a fact which has been many times illustrated; one case occurring on the Camden and Amboy road a few months since, in consequence of backing against a pair of horses, and by which several cars were smashed and many lives lost. He who, without pausing or even looking, will drive upon a railroad track, is guilty of more than carelessness.

Sweet Odors.

Our readers have been favored for the past two years with many very interesting notes upon a variety of scientific subjects, from the pen of Septimus Piesse, of London. This gentleman is of the firm of Piesse & Lubin, well known manufacturers of perfumes and cosmetics, the result of much careful experiment in the field and laboratory. We cannot too highly extol the quality of their products, a fine sample of which we sometime since received from Mr. Piesse, through his agency here, Geo. E. Inger & Co., No. 399 Broadway.

Telegraph Cable.

A telegraph cable one mile long, was lately shipped from Buffalo to Detroit, to be used for the purpose of connecting the Western Union Telegraph Line with the Montreal Telegraph Line. It is to be laid across the river at Belleisle, a mile and a half above Detroit. It is a piece of the first submarine cable laid from Newfoundland, and which was lost in the ocean. Some portions of it were afterwards secured, and the piece described has been purchased for the purpose mentioned. It contains three wires.

One million barrels of palm oil are now exported annually from the Republic of Liberia.

© 1857 SCIENTIFIC AMERICAN, INC.

Steam Plowing.

The London *Engineer*, in a recent article on this subject, holds that few appear to comprehend the weight of a traction engine necessary to serve as an anchor, or to counterbalance the resistance of a tilling implement in steam plowing. The weight of a portable engine of the ordinary size, such as is used for threshing, is about three tuns. It is a common conclusion that if such an engine could be got up so as only to weigh two tuns, the problem of steam culture by direct traction would be solved; and yet at Chelmsford, in the heavy land field, Boydell's traction engine, weighing upwards of nine tuns, was proved to be too light for sustaining the resistance of five plows, each of four horse draft —total, twenty horses—the endless rail or shoe slipping on several occasions, allowing the wheel to turn round without advancing. Moreover, it will have been seen from Mr. McAdam's report of a trial of a similar engine between Thetford and London, that the construction of such engines must be heavier, and not lighter, in order to avoid vibration and breakage. So far, therefore, as experiment will yet warrant a conclusion, traction engines must be heavier, and not lighter than those now in use.

On the steam culture by rope traction the English are also divided as to the tear and wear of the rope and implement, and their compressing action upon the soil. The conclusion is general that less harm will be done in this case on level wet clayey land, during winter, than by horses' feet; but great apprehensions are entertained as to the effect in stubborn, stony land, especially in working over a convex surface. And not only will the tear and wear of the rope be greater in working over a convex surface than over a level one, but the compression of the wheels of the implement upon the soil must also be greater. Again, from the experiments of Mr. Hannam, of Burcot Park, in 1849 and 1850, and those made by others during the past and current year, it is the general conclusion that the wire rope will require to be heavier and not lighter than it now is, and that this will throw greater difficulties in the way of cultivating large fields. Mr. Smith, of Woolston, for instance, says that he must divide a forty acre field into forty divisions of ten acres each, which consequently cuts it up into a greater number of headlands than if the whole field were plowed from end to end; so that, between turning and anchoring, such headlands are consolidated and deteriorated in value, especially clayey lands, during the wet weather of winter.

Reverberatory Furnaces.

An interesting paper on this subject was recently read by C. W. Siemens, of London, famed for his speculations on the economy of heat, before the Manchester (Eng) Institution of Mechanical Engineers. The subject, as given in a brief report, was a new construction of furnace, particularly applicable where intense heat is required. The furnace, as at present constructed, is applied to the melting of metals. A number of zigzag passages are formed of fire-brick. There are two fires, and the draught to and from each passes alternately along these passages. So nearly is the heat absorbed that what ultimately escapes up the chimney is only at about 200 to 300 degrees Fah. It had been used for about three months in a furnace for iron and steel, and the result showed a saving of 79 per cent. as compared with the old furnace, turning out the same quantity of metal! Mr. Atkinson, of Sheffield, observed that they had one of those furnaces, and found the consumption to be so small that he had the particulars noted during six days, of twenty-four hours per day; the consumption was 1 tun 10 cwt., while the consumption for the same period by the old furnace was 7 tuns; each furnace doing the same description of work. The furnace had been applied to the melting of cast steel with favorable results. The average of melting steel was generally 5 tuns of coal to 1 tun of steel, but with this furnace they melted a tun of steel with a tun of coal. Besides this, there was no smoke whatever; and if this furnace became general in Sheffield, of which he had no doubt, they would be in a position to vie with any atmosphere in the world. In answer to a question as to whether the changing of the currents in the regenerator—thus letting in cold air upon them after they had become highly heated—did not damage the brickwork, Mr. S. explained that in each case the cold air came first against the part least heated, then against the next, taking up one hundred or two hundred degrees at each stage, and on this account no cracking from contraction took place. It was also inquired how the iron could be improved by this plan? Mr. S. replied that the puddling had not been long tried, but he thought it might arise in this way:—In the ordinary furnace there was a violent draught, but in this the draught was small, and the flame did not cut the iron; it gave an intense heat, with a comparative quiet atmosphere, thus less oxyd of iron was produced. The iron must also be more pure, because fewer particles were carried over to it from the fire. After some further observations, several gentlemen expressed a hope that, as the matter was a subject of such vast importance to all in the iron trade as well as to those who used iron, Mr. S. would take an early opportunity of furnishing further particulars.

Explosive Rifle Bullet.

A few weeks since it was noticed in our columns that Captain S. Norton, of London, had invented an explosive shell for breech-loading firearms; since that period the inventor has sent us some samples of his destructive missles. The following figures represent the shell in section, (fig. 1,) and how it appears when exploded, (fig. 2).

A is the hollow shell, cast with a stub, D, or this may be a wood screw placed in the mold to form a pin for the sabot when cast. B is a hollow chamber filled with percussion pow-

Fig. 1

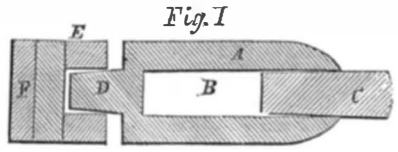
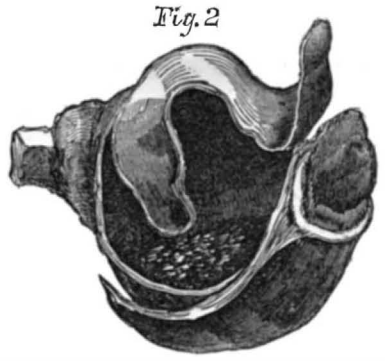


Fig. 2



der, and C is an iron plug fitted in the opening. To the stub, D, is fitted a sabot of cork, E, with two pieces of leather, F, glued to it. The sabot is made of greater diameter than the ball. If employed for a rifled cannon, the elongated shot, A, of cast iron, can be used without injuring the grooves of the gun, as the sabot will fill the grooves and receive the spiral motion in its discharge.

The bullet is formed of lead for common rifles, and instead of an iron plug, C, a small conical glass tube containing the percussion powder may be inserted in the opening of the chamber, B. When the point of the ball strikes, the iron plug, C, ignites the percussion powder, which explodes in the chamber, or if a glass tube is used, it is broken when the point strikes, and the bullet is then exploded. This is a destructive missile either for breech-loading cannon or common firearms.

Sulphur Paint.

A sulphurized oil paint, prepared by subjecting eight parts of linseed oil and one part of sulphur to a temperature of 278 degrees, in an iron vessel, has recently been brought to the notice of the Society of British Architects. This paint, when applied in the ordinary manner, to the surface of a building of stone or brick, or to wood work, effectually keeps out the air and moisture, and prevents the deposits of soot and dirt. It is recommended as cheaper than ordinary paint, and may prove worthy of attention.

Effects of Light.

According to a late writer in the London *Quarterly Review*, there is some law yet undiscovered affecting the operations in the photographic art. Sometimes, on a beautifully clear day, with not a breath stirring, the operator feels confident of success, but something in the air is absent, or present, or indolent, or restless, and the industry which has impelled the attempt to secure a series of views in the open air is rewarded by nothing but a set of almost perfect blanks.

There are four kinds of light, or rather, four kinds of influences in the sun's rays, each separate from the other. First, The light which affects the retina. Second, The heat which effects the nerves. Third, The chemical influence which bleaches colors and produces the artistic delineations of the photograph and daguerreotype; and Fourth, The phosphorescent influence—one of no practical importance as yet. By using different means of refracting and reflecting, these influences can, to a great extent, be separated each from the other. And it would appear that the extent and strength of the photographic influence does not always conform in nature to the strength of what we ordinarily term light.

As respects the time of day, however, one law seems to be thoroughly established. It has been observed by Daguerre, and subsequent photographers, that the sun is far more active, in a photographic sense, for the two hours before, than for the two hours after it has passed the meridian. As a general rule, too, however numerous the exceptions, the cloudy day is better than the sunny one Contrary, indeed, to all preconceived ideas experience proves that the brighter the sky that shines above the camera, the more tardy the action within it. Italy and Malta do their work slower than Paris. Under the brilliant light of a Mexican sun, half an hour is required to produce effects which in England would occupy but a minute. In the burning atmosphere of India the process is comparatively slow and difficult to manage; while in the clear, beautiful, and, moreover, cool light of the higher Alps of Europe, it has been proved that the production of a picture requires many more minutes, even with the most sensitive preparations, than in the murky atmosphere of London.

Poisons and Antidotes.

A distiller in Kentucky publishes a letter in the *Ohio Farmer*, in which he says he has discovered an effective remedy for the hog cholera, which has been prevailing so extensively in the West. His remedy is, as soon as he finds the hogs beginning to get sick or to die, to mix a quantity of arsenic with their food, and that invariably makes them healthy again, the powerful mineral poisons of the arsenic overcoming the vegetable poison in the still slops. We wish to urge the inquiry how far the effect of this double poisoning, neutralizing, etc., affects the character of the meat for food. What laws regulate the poisoning of living flesh? And is it, or not, possible to maintain an animal in tolerable health while its meat is by organic or inorganic poisons made seriously objectionable?

Modification of Wood Bearings.

The bearing for shafts for screw propellers adopted lately by an eminent English engineer, is to surround the shafts with casings of brass, the inner surface of which are grooved so as to receive fillets of wood.—Through the spaces formed between the fillets water is allowed to flow freely between the shaft and the bearing, keeping the whole cool, and acting as a lubricator. Another modification of the invention is to fix the wooden fillets on the shaft, which then rotate with it in the brass bearings.

Making Wood Fire-Proof.

Professor Rochelder, of Prague, has just discovered a new antiphlogistic material, which promises to become of importance. It is a liquid chemical composition, the secret of which is not yet divulged, which renders wood and other articles indestructible by fire. Several successful experiments have been made, and others are promised on a larger scale.

Piscaculture.

The Legislature of Connecticut, at its last session, appointed a committee on the practicability of restoring the salmon to her waters. The Legislature of New Hampshire also appointed a committee on the artificial propagation of fish, and Massachusetts, as we have before noticed, is acting in the matter.

A company has purchased the fishing rights of the proprietors of the Saltonstal Lake, in the county of New Haven, with the intention of proceeding to stock it with salmon and salmon trout, by means of artificial propagation. One of the parties concerned is a German, who has practiced the art successfully in his own country. An act has been passed amply protecting the company in this enterprise, and prohibiting, under a heavy penalty, all fishing in the lake after the operation of stocking it shall have been commenced. The company confidently expect to have a million of salmon hatched within a year.

Preparation of Flax Fibre.

An Irish newspaper gives an account of a process for improving the quality of flax fibres. It consists in throwing down upon the flax a small quantity of oil, say about an ounce to the pound of flax, which is done by boiling the flax in an alkaline soap ley, washing with water, and then boiling it in water slightly acidulated with some acid—acetic acid being, perhaps, the most suitable, from its exerting no injurious action upon vegetable fibre. The acid decomposes the soap, the fatty constituent of which is left in the fibre, or, perhaps, a mixture of an acid soap and a small portion of free oil. These enter into and through every part of the fibre. After this treatment it is washed, and is then found to be soft and silky, its spinning quality being thereby much improved and its value very much increased.

Coloration of Poisons.

A late writer recommends that all poisons employed or sold by druggists be strongly colored with carbo-azotic acid, one grain of which is sufficient to impart a distinct yellow to 70,000 grains of water. This acid has the peculiar property of imparting a yellow color to the skin of a person taking it, as also to any food in which it might be mixed. It has been proved not to destroy or in any way modify the beneficial effect of prussic acid in which it had been mingled, and the inference is that it would prove equally inert in other poisons, while it would serve to alarm the user and indicate the poisonous character of any preparation in which it had been mingled either by accident or malice.

Peat.

In the eastern part of Massachusetts some eighty thousand acres are covered with peat, to the depth of six feet four inches on the average. The quantity has been estimated at of 180,000,000 tuns. In other sections of New England and the Northern and Middle States this valuable deposit is in almost inexhaustible abundance. Peat fuel, if properly prepared, rivals in cheapness, light, and warmth, the best qualities of cannel coal.

Pacific Wagon Road.

On the 1st inst., thirty wagons and a large part of the intended force under W. F. W. Magraw for the wagon road expedition, were started out upon the plains from Independence, Mo. This route has been designated by the Department of the Interior as the Fort Kearney, South Pass, and Honey Lake Pacific Wagon Road. The remainder of the party will be started soon.

Mathematics.

A prize of $500 is offered this year by Harvard College to any pupil who shall be decided by the Corporation to have attained the greatest skill in mathematics. The person who offers the prize, which is only proposed for this year, is Uriah A. Boyden, a civil engineer of Boston, favorably known for his success in designing turbine water wheels.

Among the entertainments on the Fourth at Buffalo, was the explosion of some four or five kegs of powder on a rock in Coit Slip, which threw a vast column of water to a great hight, and so shattered the rock that the engineers say it may be got away without further blasting.

© 1857 SCIENTIFIC AMERICAN, INC.

SUBSCRIBERS who enclose letters to us to be addressed to various correspondents, should bear in mind that however willing we may be to send their letters to the proper persons, it is almost impossible for us to do so. Letters sent to us containing a simple inquiry are immediately answered, and are not preserved. Our correspondence is necessarily very large, hence it is quite impossible for us to remember the names of even only a small portion of those who write to us.

H. A., of N. Y.—We are sorry to inform you that the invention you propose for ventilating gas-burners, so as to carry off the noxious products of combustion, is not new. The gas-lights of the library of the Atheneum of London were ventilated by pipes dipping into the lamp glasses, which carried away the burned air out of the room into some open space in the ceiling, or to flues extending into the open air. This device, in substance, has been adopted in the Tremont Temple, Boston, the lights being set in the mouths of small flues in the ceiling.

E. E., of Md —A patent is for a machine, and not for a principle or function apart from machinery. You will find a decision on this point in Robb's Patent Cases, Vol. 1, page 734.

A. B., of Boston —The Thames Tunnel is not used for a carriage-way at all, although it has been proposed to construct approaches to it for this purpose through circular excavations two hundred feet in diameter. As an investment, the tunnel has never paid any profit on the $3,000,000 expended in its construction. Its receipts have amounted to scarcely $25,000 per annum. It is a damp, uncomfortable hole, and is rendered more so by the influx of land springs, which are a continual source of expense to repair.

J. C., of Conn.—*Or molu* and bronze are not the same. The former is composed of 52 parts of zinc and 48 of copper; the latter is a mixture of tin and copper, in various proportions. Birmingham, in England, is celebrated for its excellent bronzes, but they do not equal in fineness those made in Paris. We are doing comparatively nothing in this country in either of these articles. It will require time to bring the businesss into importance.

B. E. A., of Wis.—You will probably be surprised to learn that your device for raising water is one of the oldest inventions on record. It is the old Archimedean screw, so named because invented by the famous Archimedes. It has been very extensively used as a water elevator, but modern ingenuity has entirely supplanted it in this country. The simple double-acting, force and lifting pumps are much better adapted to the purposes for which you have intended your supposed improvement. This old screw, together with the endless chain water wheel, are often presented to us as new inventions.

B. H., of of Min. Ter.—You can procure a good clapboard machine of A. Crosby, Fredonia, N. Y.

S. & C. D. J., of Vt.—We cannot form an intelligible judgment on your machine for upsetting wagon tire, from the description given. Send us a sketch and description of it, and we will be happy to advise you in reference to it.

G. G., of L. I.—The specimen of inner bark sent, seems to us to have a fine fiber, and might make good paper, but it would require careful experiments to determine its utility. We do not know who would attend to such an investigation. Probably some party who is, or has been, in the paper business, would be most competent.

J. S. F., of Pa.—A train of cars going forty miles per hour, with all the wheels "braked" to about the full extent usually practised, would stop in about 400 feet; but as the locomotive—by far the heaviest mass in the train, and consequently possessing most momentum—is not provided with brakes, the train would move considerably farther, say 600 feet. In experiments the cars have generally stopped in from 350 to 700 feet.

H. H., of Conn.—We admit that the two inventions are not the same in their particular arrangements, but they are analogous in their mode of operation, and the principle, it cannot be denied, is identical. You cannot procure a patent for the simple difference you propose in the construction of your plan. Two inventions may accomplish the same result, and become the proper subjects of two patents, but there must be a substantial difference in the two contrivances, which does not appear in your case.

E. A. R., of Pa.—We do not think there is much doubt of the novelty of your improved apparatus for treating hides. You had better send us a model of it without delay; thus you may avoid the possibility of an interference.

J. W. D., of Ala.—"Gold from baser substances standing all known tests" is not "a humbug," as it has never, we think, deceived any one. There is no such transmutation in the present state of the arts.

J. H. S., of N. Y.—We know of no efficient means of preserving rain or other water sweet in a cistern, in the summer, short of making the cistern perfectly sweet, and filtering all the water before its admission. A free access of air will probably conduce to preserve water under ordinary circumstances. A housekeeper in Brooklyn enjoys the use of pure and sweet rain water all the year round from a large cement-lined cistern below ground, which receives the water from the roof through a thick filter of sand and pebbles. This filter occupies the whole of a small bedroom in the third story.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, July 18, 1857:—

J. H. G., of Ky., $30; J. M., B., of Pa., $25; J. W. R., of Ohio, $30; S. & C., of Pa., $30; E. B. L., of N. Y., $250; E. B., of Mass., $30; W. W., of Mo., $30, B. & R. of N. Y., $30; St. J. & B, of N. Y., $55; W. J. S., of N. Y., $30; E. S., of Conn., $150; C. D. T., of Ill., $30; O. D. & M., of Ill., $25; C. B. C., of Iowa, $30; L. V., of Wis., $30; W. D., of N. Y., $30; J. G. A., of N. J., $25; J. M., of N. Y., $30; L. W., of N. Y., $70; McN. & C., of N. Y., $25; B. T. B., of N. Y., $55; W. B., of N. Y. $30; T. W. R., of N. Y., $50; N. C. S., of Conn., $40.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 18, 1857:—

J. M., of N. Y.; J. M. B., of Pa.; J. H. G., of Ky.; L. & M., of Conn.; L. W., of N. Y., (3 cases); J. G. A., of N. J.; O'D. & M., of Ill.; H. B., of Conn.; N. C. S., of Conn.; G. C. T., of Mass.

IMPORTANT TO INVENTORS.

The rapid growth of our Patent Agency Business, during the past three years, has required a great addition to our ordinary facilities for its performance, and we are now able to announce the completion of a system which cannot fail to arrest the attention of all who have business of this kind to transact.

OUR PRINCIPAL OFFICE

will be, as usual, at No. 128 Fulton street, New York There is no other city in the Union so easy of access from every quarter as this, consequently there are greater advantages in regard to the transmission of models, funds, &c., through the various channels that center in New York. Two of the partners of our firm reside here, and during the hours of business are always at hand to counsel and advise with inventors. They are assisted by a corps of skillful Examiners, who have had many years of active experience in the preparation of cases for the Patent Office.

To render our Patent Agency Department complete in every respect, we have established a

BRANCH OFFICE IN THE CITY OF WASHINGTON,

on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general care of one of the firm, assisted by experienced Examiners. The Branch Office is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington having business at the Patent Office are cordially invited to call at our office.

A SPECIAL REQUEST.

Our facilities for the speedy preparation of cases previous to the application for the patent being much more extensive in New York than at Washington, we especially require that all letters, models and remittances should be made to our address here.

EXAMINATION OF INVENTIONS.

We have been accustomed from the commencement of our business—twelve years since—to examine sketches and descriptions, and give advice in regard to the novelty of new inventions, *without charge*. We also furnish a printed circular of information to all who may wish it, giving instructions as to the proper method which should be adopted in making applications. This practice we shall still continue, and it is our purpose at all times to give such advice freely and candidly to all who apply to us. *In no case will we advise an inventor to make application unless we have confidence in his success before the Patent Office.*

Our extensive experience in mechanical and chemical improvements enables us to decide adversely to nearly one half of the cases presented to us for our opinion, before any expense has occurred in the preparation of the case for a patent.

When doubt exists in regard to the novelty of an invention, we advise in such cases a

PRELIMINARY EXAMINATION

to be made at the Patent Office. We are prepared to conduct such examinations at the Patent Office through our "Branch Agency," upon being furnished with a sketch and discription of the improvement. Our fee for this service will be $5.

After sufficient experience under this system, we confidently recommend it as a safe precautionary step in all cases before application is made for a patent—not that there will be no rejections under the system It is impossible to avoid such results in many cases, owing to the exceedingly wide range taken by the Examiners in the examination of cases; but, nevertheless, many applicants will be saved the expense of an application by adopting this course. Applicants who expect answers by mail must enclose stamps to pay return postage.

THE COSTS ATTENDING AN APPLICATION

for a Patent through our Agency are very moderate, and great care is exercised in their preparation. No cases are lost for want of care on our part in drawing up the papers, and if the claims are rejected, we enter upon a speedy examination of the reasons assigned by the Commissioner of Patents for the refusal, and make a report to our clients as to the prospects of success by further prosecution.

A circular containing fuller information respecting the method of applying for Patents can be had gratis at either of our offices.

REJECTED APPLICATIONS.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, enclosing the official letters, &c.

FOREIGN PATENTS.

We are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard Saint Martin, Paris, and 3 Rue Therrsienne, Brussels. We think we may safely say that three-fourths of all the European Patents secured to American citizens are procured through our agency.

Inventors will do well to bear in mind that the English law does not limit the issue of Patents to inventors Any one can take a Patent there.

Circulars of information sent free on application.

☞ Remember the SCIENTIFIC AMERICAN PATENT AGENCY, No. 128 Fulton street.

MUNN & COMPANY, Proprietors.

CLARKE'S CHIMNEY SAFE is suitable for all chimneys (old or new) which it will improve in many respects. Price, including ventilating register, &c., $4. This is a patent for the million. Rights for sale. GEO. B. CLARKE, Patentee, Leonardsville, N. Y. 1*

TO WATCHMAKERS AND JEWELERS—The owner of a watch and jewelery establishment in Memphis, wishes to sell out. The house has a reputation equal to any. The watch work alone, worth $5,000 a year, can easily be made much more. For particulars, address Box 207, Post Office, Memphis, Tenn. 1*

STEAM ENGINES, Steam Boilers, Steam Pumps Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front st., Brooklyn, N. Y. 46 tf

---

BOONE'S VERTICAL ROPE MACHINE—Patented July 15, 1856. Illustrated in the SCI. AM. of Feb. 28th last; takes but little room, and is thus described by a purchaser:—"It makes the prettiest and best rope at a less cost, and more of it, and requires but little power to drive it. I purchased one, and have run it several months. I like it the best of any rope machine I ever saw, and have ordered more of them" So said one of an extensive rope manufacturing firm, well known for the excellence of their manufacture. For rights, or machinery for Missouri or Ohio, address A. & J. T. Speer, 212 Broadway, N. Y. For any other State or Territory address the proprietor, who will also supply the most improved preparation machinery for either hemp or cotton. Address THOMAS G. BOONE, Brooklyn, N. Y. 1*

NOTICE—To Samuel H. Whittaker, of Cincinnati, O., and all others interested: Whereas, on the 9th day of June, 1857, there was issued to you from the U. S. Patent Office letters patent for a nut machine, in the claim for which you notice one of Richard H. Cole's patents for making nuts, dated June 3, 1856; and whereas, by examining your model we discover that by your method you make use of not only said patent of date June 3, 1856, but also one other patent of same date, and a patent of said Cole's, dated July 17, 1855. Now, therefore, we, the undersigned, Richard H. Cole and Charles P. Chonteau, the present owners of said Rich'd H. Cole's patents for the manufacture of metallic nuts, hereby notify you not to use the above-named patents, so owned by us, and we warn the public against the use of our said patents without license from us. R. H. COLE,
St. Louis, June 29, 1857. C. P. CHONTEAU.
1*

BAROMETERS, Air Pumps, Galvanic Batteries, Magic Lanterns, Mathematical Instruments, Microscopes, Thermometers, Tape Measures, Surveyors' Compasses, Spy Glasses, Landscape Mirrors, Electrical Machines, Stereoscopes, Gyroscopes. McALLISTER & BRO., 728 Chesnut st, Philadelphia.

A priced and descriptive catalogue (108 pages, 200 illustrations) furnished gratis, and sent by mail without charge to all parts of the United States and Canada 46 2*

FOR SALE—A second-hand 20 horse-power steam engine—made in 1852 by Sutton in Philadelphia—with a grist mill with best French burr stones, and circular saw mill attached, together with boilers, pumps and piping, and everything complete and now running. Price $1,600, or the whole of it to be examined by a competent machinist, and 10 per cent less than his estimated value will be taken. It is to be removed at the convenience of the purchaser; is within four miles of a station on the S. & A. R. R., and will be hauled there if desired at a moderate price. It is offered because I am about to emigrate West this fall, and early applications are desired. Address I. D. STROTHER, Strother Post Office, Fairfield Dist., S. C. 1*

SCREW BOLTS with Square, Carriage or Countersunk heads, bolt ends, square head wood screws, set screws, machine screws, ratchet & breast drills, standard steel and shrinkage rules for sale, by CHAS. MERRILL & SONS, 556 Grand st., New York. 46 5*

WANTED—A permanent situation as Draughtsman in a large machine shop. Address Box 555 Saratoga Springs, N. Y. 45 2*

FOR FOUR LETTER STAMPS I will send (free of postage) a copy of the celebrated 100 Metropolitan Hotel recipes for Cooking, Baking, Making Pastry, Preserves, &c. As these recipes are copyright, they cannot be had except of J. R. STAFFORD, 16 State st., New York. 45 4

MECHANICS AND MANUFACTURERS—Tennessee Exhibition. The Third Annual Fair of the Mechanics' Institute of Tennessee will be held at Nashville in October next. Exhibitors from all the States will be permitted to enter articles and compete for the first premiums For particulars address WM. STOCKELL, President, or H. K. WALKER, Secretary. 45 5

WOODWORTH PLANING MACHINES of superior style and workmanship, of various sizes, and the latest improvements. Also Steam Engines and Boilers, Sash and Blind Machinery, Tables, Planers, Drills, Belting, and all kinds of Machinists' Tools on hand, and for sale at the Machine Depot, 163 Greenwich st., New York. A. L. ACKERMAN. 45 8

CRYSTAL PALACE—This splendid edifice is now under the auspices of the American Institute. Samples of the productions of our country in Agriculture, Manufactures, and the Arts, will be received for public inspection. All information relative thereto will be given at the Palace by address ng WM. B. LEONARD, Corresponding Secretary and Agent. 45tf

---

1000 AGENTS—For new, sure, unparalleled inducements. Send stamp to M. J. COOK Detroit, Mich. 46 2*

E. G. CUSHING'S Unequalled Straw and Stalk Cutter.—For finished work, or the right of territory, address the inventor, Dryden, Tompkins county, N. Y. 44 10*

L. D. GOODWIN'S celebrated Patent Central Vent Water Wheel For wheels or the right of territory address J. W. DWIGHT, Dryden, N. Y., or E. C. BRAMHALL, 190 Fulton, N. Y. 44 10*

WAIT'S PATENT SPOKE MACHINE does double the amount of work with the same amount of power, and equally as good as any machine in use. Machines and rights for sale very low. Address P. H. WAIT, Barkerville, Saratoga co., N. Y. 45 4*

VALENTINE & BUTLER, Patentees and Manufacturers of the alum patent fire and burglar-proof safe, and of the rotary lock for hall and store doors, 90 and 92 Maiden Lane, New York. 45 2

STEAM ENGINES FOR SALE—One of 8, one of 12, and one of 18 horse-power. H. A. CRANE, cor. 29th st. and 11th ave. 44 6*

WOODWORTH'S PATENT PLANING MAchines—Patent expires Dec. 27th, 1856. Machine constantly on hand, together with steam engines and boilers of all sizes. Lathes, planers, drills, circular saw mills, belting of leather and rubber of the best quality, Orders respectfully solicited at the Machinery Depot, 163 Greenwich st., N. Y. A. L. ACKERMAN. 45

WANTED—300 Active Young Men, at a salary of $100 per month. A capital of only $5 required. Full particulars given to all who inclose a stamp and address N. R. GARDNER, Peace Dale, R. I. 44 5*

FIRST CLASS Family Journals:—Life Illustrated, a first class pictorial paper, weekly. $2 a year, $1 for half a year. Water-Cure Journal, devoted to the laws of life and health. $1 a year Phrenological Journal, devoted to the improvement of mankind. $1 a year. The three journals sent one year for $3. Address FOWLER AND WELLS, 308 Broadway, N. Y. 44 2

DR. D. BREED, late Assistant and acting Chief Examiner in the U. S. Patent Office, has established at Washington, D. C., a chemical laboratory for experiment and analysis, in order to test and improve processes of manufacture, and mechanical devices employed in the chemical arts, and to procure and defend patent rights. After many years devoted to chemistry (having studied in the German laboratories) Dr. Breed feels confident in offering his services as a practical chemist to inventors and others interested in the chemical arts and manufactures. 44 4*

CAST STEEL WIRE DRAWING at the Union Works, Paterson, N. J. Orders solicited and carefully filled by CHAMBERLIN & CO. 43 13*

STEAM ENGINES FOR SALE—Two 5-horse power and one 30-horse power, with or without the boilers. Address J. R. JONES, Novelty Iron Works, Harrisburgh, Pa. 43 4*

FIVE HAND LATHES, JUST FINISHED, FOR SALE—Five feet slide, 10-inch swing, suitable for jewelers' work, drilling, polishing or wood turning. Price, including counter, hangers and pullies, boxed, $50. Address O. C. CRANE & CO., New England Village, Mass. 43 4*

COMMERCIAL AGENTS, able and honest men from New England or New York. A. W. HARRISON, Philadelphia, Pa. 35 13*

PORTABLE STEAM ENGINES.—S. C. HILLS No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2 1-2 horse can be seen in store, it occupies a space 5 by 3 feet, weigh 1500 lbs., price $240; other sizes in proportion. 28 e3w

---

INGERSOLL'S IMPROVED HAY PRESS—The best portable Hand Power Press in use for the purposes of Baleing Hay, Straw, Broom Corn, Husks, Hair, Hides, Moss, Hemp, Rags, Wool, Cotton, &c. Prices from $50 to $200. Also an improved press for ornamental composition work. Price $50 and $65. Also Ingersoll's Patent Tree Saw, for sawing down trees. This is a perfectly portable machine, and has been thoroughly tested during the past winter. Price $75. All orders filled promptly. Also State and County rights for sale. Circulars containing full information sent on application to the FARMER'S & MECHANIC'S MANUFACTURING CO., Green Point, Kings co., L. I. 44 4*eow

---

WOODWORTH'S PATENT PLANING MAchines of every kind and all prices. A large assortment on hand; and I am prepared to construct any machine to order from ten days to two weeks, and guarantee each machine to be perfect in its construction, and give purchasers entire satisfaction. The patent has expired, and will not be renewed. I make this business exclusive, manufacturing nothing but the Woodworth Machines, and for that reason can make a better article for less money; and with my fifteen years' experience I fully guarantee each machine to come up to what I am willing to recommend, that is, that each machine shall be more than equal to any other manufactured for the same price. JOHN H. LESTER, 57 Pearl st., Brooklyn, N. Y., three blocks above Fulton Ferry. 35 tf

---

STEAM PUMPS, Boiler Feed Pumps, Stop Valves, Oil Cups, Cocks, Steam and Water Gauges, sold by JAMES O. MORSE & CO., No. 79 John street, New York. 41 13

BOILER FLUES—All sizes, and any length desired, promptly furnished, by JAMES O. MORSE & CO., No. 79 John street, New York. 41 13

WROUGHT IRON PIPE—Plain and galvanized sold at wholesale, by JAMES O. MORSE & CO., No. 79 John street, New York. 41 13

ENGRAVING ON WOOD and **MECHANICAL** DRAWING, by RICHARD TEN EYCK, Jr., 128 Fulton street, N. Y., Engraver to the Scientific American. 16tf

---

TO INVENTORS AND MANUFACTURERS—Rooms with power, for the exhibition of machinery, can be had in the Depot Buildings, corner of Elm and Franklin sts. The location is extremely desirable for its prominence and convenience to the business part of the city. Apply to T. BENNETT, on the premises. 43 tf

---

MACHINE BELTING, Steam Packing, Engine Hose.—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY John H. Cheever, Treasurer, No. 6 Dey street, N. Y 40 tf

---

FIVE HUNDRED THOUSAND LOOMS in the United States—Wm. H. Howard's Comb Temples, patented May 26, 1857, are already in successful operation. The principle is new; it measures every pick to an equal length, indicates the number of picks per inch, leaves a smooth and equal selvage, without displacing threads or marking cloth; simple, cheap and durable, and destined to supersede all other self-acting temples. Orders for temples, or inquiries for rights to manufacture will receive immediate attention if addressed to GEO. C. HOWARD, 18th, below Market, Philadelphia. 42 4*

FORBES & BOND, Artists, 89 Nassau st, N. Y., Mechanical and general Draughtsmen on wood, stone, &c

---

SPOKE LATHES, Blanchard's patent. Power Hub Mortising Machines, Hub Hewing Machines, Hub Boring Machines, Turning Lathes, Scroll Saws, Wagon and Coach Makers' machinery in general. We are also agents for the proprietors of the Blanchard patent. LANE & BODLEY, Cincinnati, O. 44 4*

LAP-WELDED IRON BOILER TUBES.—Prosser's Patent.—Every article necessary to drill the tube-plates, and set the tubes in the best manner. 44 26 THOS. PROSSER & SON, 28 Platt st., N. Y

WOODWORTH PLANERS, STEAM ENgines, &c.—Twenty-seven years' experience enables me to furnish Woodworth Planers for surfacing one or both sides, planing and matching, rabbiting, beading, or for moldings or clapboards, in any variety of beautiful construction and great power. Ample evidence of the superiority of my machines will be furnished from parties that have other machines in the same mill. Every machine will be accompanied, if desired, with a written warrantee. As some parties have been supplied with machines of another make when they supposed they were getting mine, I would advise that purchasers should buy none unless my name is on in full. Matteawan steam engines, machinists' tools, cotton and woolen, sash-blind and door machinery, leather banding, &c., furnished at the manufactory at Matteawan, N. Y., or at 62 Courtland street, N. Y. S. B. SCHENCK, Agent. 39 tf

---

THE BEST PLANING MACHINE IN THE World—Patented Nov, 21, 1854 and Nov. 13, 1855. These patents were obtained for improvements upon the celebrated Woodworth Planing Machine. They received a Gold Medal at the last exhibition of the Massachusetts Charitable Mechanics Association. Machines of all kinds and sizes constantly on hand, which are warranted to give entire satisfaction, and to be superior to any now in use. For further information address the patentee, JAMES A. WOODBURY, No. 1 Scollay's Building, Court st, Boston, Mass. 42 13*

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer. F. S. PEASE, 61 Main st., Buffalo, N. Y.

N. B.—Reliable orders filled for any part of the United States and Europe. 40 tf

---

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters Chucks &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co., New Haven, Conn. 40 tf

---

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 40 f

---

PUMPS—BURNAP'S Patent Excelsior Pumps are acknowledged to be the best and most durable force pumps in use for steamers, factories, breweries, &c. See engraving in No. 34, this Vol. Scientific American.—JEREMIAH CASEY, Agent, No. 231 West st., New York. For sale of rights or other information, address BURNAP & BRISTOL, Albany, N. Y. 34 13*

THE TEN SOUTHERN STATES—The right to manufacture and sell a valuable article, (patent issued June 30, 1857,) in the above-named States, is now offered for sale at 393 Broadway, corner Walker street, New York. R. S. JENNINGS, Patentee. 45 4*

FOR TWO LETTER STAMPS I will send (free of postage) six Anatomical Engravings, with remarks. Address J. R. STAFFORD, Practical Chemist, 16 State st., New York. 45 4

TO PATENTEES AND PURCHASERS—The subscriber will examine or experiment on the working of new machines and processes, prepare elaborate reports, and give professional opinions for public or private use. Refers to Munn & Co. THOS. D. STETSON, Consulting Engineer, 5 Tryon Row, New York. 45 tf

© 1857 SCIENTIFIC AMERICAN, INC.

Science and Art.

Wool-Growing in California.

There are strong indications that California is to be, ere long, a State from which large quantities of wool will be exported. The *California Farmer* of June 13th, states that one firm commenced last year with the importation of one hundred and twenty sheep from Australia. They were thin and sickly when they arrived. In a brief time they were taken to Sacramento, and a shepherd provided. The number had been reduced by death and sale to ninety-six, of which seventy-seven were ewes and nineteen rams. They commenced in April with the above named stock —ninety-six in all—which at the present time amounts to two hundred and twenty-six; being an increase of one hundred and thirty, or equal to one hundred and fifty per cent, in stock, on the seventy-seven ewes.

Although this was but the first year, and the sheep had to become acclimated, yet the lambs produced are improved in size, form and weight, showing this improvement by reason of the climate; and in addition to all this, at the shearing of these sheep in May, the amount of wool taken was six hundred pounds, and sold at forty-five cents per pound, or $270 cash.

We regret that the *Farmer* does not give more attention to the quality of the wool, as it is well known that the wool of fine wooled sheep deteriorates in any country not adapted to them. If the hillsides of California will grow the finest qualities of wool, wool-growing will prove a very profitable investment in that part of the country.

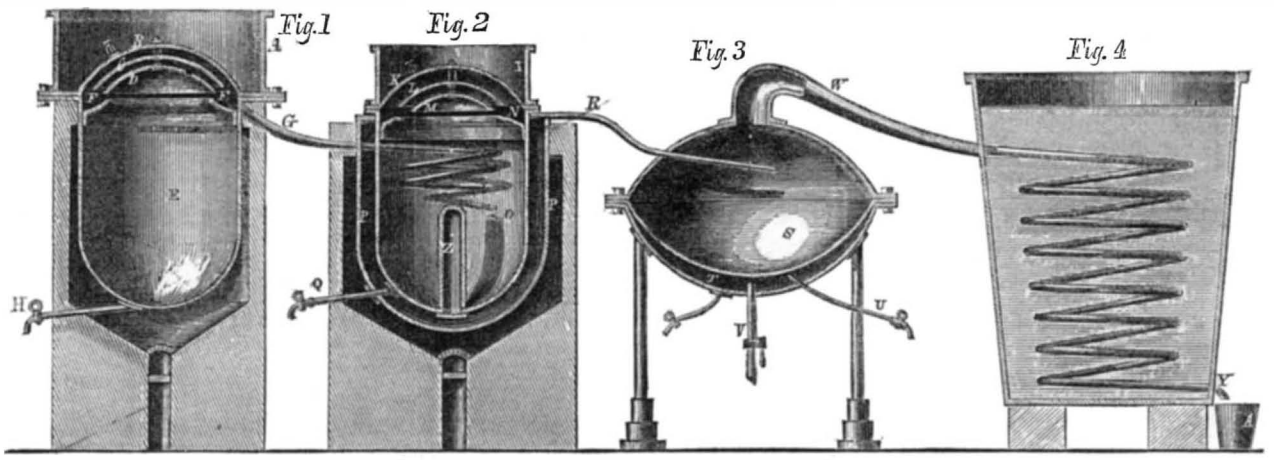
Apparatus for Distilling Petroleum.

It has long been known that the petroleum, sometimes called "earth oil," which exudes in liberal quantities from springs or fountains in some localities, is capable of being treated by distillation by the application of heat, so as to produce valuable oils. It has long been treated so as to distil from it oils or oily substances, volatile hydro-carbons, substantially the substances called eupion, eupion oil, and paraffine; and in such processes, such substances, when obtained, have been treated by various processes of purification.

We find in the London *Engineer* the specification of an English invention, from which the accompanying engravings of the apparatus are prepared, and which does not consist in the simple distillation of the earth oil, or in the purification of it generally, neither in the use of chemical agents generally, but in a particular method of producing the three several substances, namely, eupion, or thin oil, eupion oil, or thick oil, and paraffine, or hard grease, by means of an apparatus consisting of several boilers or stills working in connection with each other, so that the three substances are produced by one continuous operation, and which, together with certain chemical agents, produce a better result than has before been attained. Figs. 1, 2 and 3 represent a section of three boilers, connected together and working the one into the other by means of the conduit pipes, G R W; Fig. 4 represents the condensing or worm tub. Fig. 1 represents the body of the first boiler, which should be of cast iron set in brick work, and having a groove or annular channel F F, three inches deep, running round within the inner circumference of the boiler to receive the condensed vapors. B is the dome of the boiler, made of copper. C D are two smaller domes, also of copper, placed within the larger dome to condense the heavy vapors arising from the boiler. All the condensed vapors sink and are deposited in the inner circular groove or receptacle, F F, and thence pass into the second boiler, O, Fig. 2, by means of the pipe, G, and spiral worm, G, also of copper. A, Fig. 1, is the boiler head, being a circular vessel fixed over the outer dome, and containing sand or some other similarly non-conducting material. H is a cock to draw off the residuum from the boiler. O, Fig. 2, represents a boiler made of copper, having a circular central tube S, closed at the top, rising up from the bottom of the boiler, and passing upwards into the body of the boiler, the more effectually to convey heat from the heating medium which surrounds the boiler into the substance under distillation. K is the outer dome, also made of copper. L M are two smaller inner domes. N is the annular groove or channel for receiving the condensed vapors. I is a circular vessel containing sand in the same manner and for the same purpose as before-mentioned with reference to the arrangement of the head of the boiler in Fig. 1. V is a pipe for conducting the vapors and condensed products (passing from the boiler, O) into the boiler, S. P P, Fig. 2, represent a larger pan or boiler of cast iron, in which the boiler G, Fig. 2, is fixed. The intermediate space between the two boilers is filled with a fixed oil of high boiling temperature, (or with impure paraffine described below), for properly heating the interior boiler. Q, Fig. 2, is a cock to draw off the contents of the boilers.

S, Fig. 3, is an elliptically-shaped boiler of copper. T is an outer pan, also of copper, as a receptacle for steam for heating the boiler, S. V is a steam pipe leading from a common steam boiler for the supply of steam; W is the neck of the boiler for conveying the vapors arising from it into the copper or lead worm within Fig. 4. which is surrounded with cold water contained in the tub for condensing. U, Fig. 3, is a cock for drawing off the contents of the boiler; T T is a cock for removing the condensed steam.

WHITE'S APPARATUS FOR DISTILLING PETROLEUM.



The boiler E, Fig. 1, is filled to three-fourths of its capacity with the petroleum, and heated gradually by means of the fire in the fire-place beneath. At the same time the oil or impure paraffine contained in the vessel P P, Fig. 2, is heated up to and regularly maintained at a temperature of about 450° Fah., and steam of about fifteen pounds pressure to the square inch is at the same time regularly supplied to the still, S, Fig. 3, by means of the pipe V. When a different degree of heat is thus properly supplied to the three stills, the distillation is carried on by the three boilers at the same time. In the first part of the distillation, the more volatile parts of the petroleum, which will be impure eupion, are first given off in vapor from the still E, Fig. 1, and the greater part of that vapor will not condense in either of the boilers, but will pass off from the boiler, E, through the pipe, G, into the boiler, O, and and from that through the pipe, R, into the boiler, S, and from that through the pipe W into the worm X, Fig. 4, where it will be condensed into impure eupion, and will be discharged at the worm end, Y, Fig. 4, into an ordinary receiver A. As the distillation is continued, the temperature of the boiler E is gradually raised, and vapor of eupion oil being next chiefly given off will pass over into the boiler, O, and through that boiler by the pipe, R, without being condensed into the boiler, S, and will there (by reason of the lower temperature of that boiler) be condensed in it into eupion oil, which will be drawn off through the cock, U. The yield of impure eupion will gradually diminish as the distillation proceeds, as will be observed by the discharge at Y, Fig. 4. As the distillation continues, the fire under the boiler E, Fig. 1, should be gradually urged until the bottom of the boiler E becomes of a low red heat, and it should be maintained at about this temperature until considerable quantities of gaseous vapors are discharged at the worm end Y, Fig, 4, when the fire of the boiler, E, should be gradually lowered. During the latter part of the distillation, large quantities of vapors of paraffine, mixed with oils of high boiling temperature pass off from the boiler E, Fig. 1, and are condensed in the dome, B, and by the curved copper plates C and D within that dome, and thence will sink into the annular channel, F F, and flow into the conduit pipe, G, and through it into the boiler O, Fig. 2. At the end of the distillation, the paraffine is drawn off from the boiler O through the cock Q to, be purified. During the process of distillation, above described, it will be found that of the vapors, which on passing over into the boiler, O, therein become at first condensed, those which boil below 450° Fah. will be again converted into vapor, and will then on rising up to the dome mostly be condensed by means of the dome and curved copper plates, K L M. These condensed vapors will sink into the channel, N, and thence pass into the boiler, S, and such portions as boil below 220° Fah. will be vaporised in the third boiler, and thence pass over into the condensing worm, Fig. 4.

This plan of distillation induces first, the discharge of impure eupion into the receiver A, Fig. 4; next, the production of the impure oil, which is termed eupion oil, in the boiler, S, to be discharged through the pipe U; and, thirdly, the production of impure paraffine in the boiler O, Fig. 2, to be discharged through the pipe Q.

Next, to purify the impure eupion collected in the receiver, Fig. 4, about one hundred gallons of impure eupion are put into a glazed earthenware or glazed iron pan, enclosed in a steam jacket, heated by steam to a temperature of about 120° Fah. To this are added fifty pounds of common salt, fifteen pounds of neutral chromate of potash mixed with three gallons of water, the whole mass being well agitated; to this are added very gradually during a period of about one or two hours, four gallons of strong sulphuric acid of commerce, of specific gravity 1·845. The whole is then thoroughly well agitated together for one hour, and allowed to settle for four hours, after which time the mixture of foreign ingredients will have combined with portions of the impure eupion, and will have settled at the bottom of the pan, leaving the upper stratum partially purified, which is then drawn off, and put into the boiler S, Fig. 3, where it is rectified by redistillation by means of steam as before. The eupion, after such rectification, is then again drawn off from the receiver A, Fig. 4, and placed in a wooden or other suitable cistern, and to every one hundred gallons are added fifteen pounds of the proto-sulphate of iron (commonly called green vitriol) dissolved in four gallons of water. These are well agitated together for half an hour; then twenty-five pounds of carbonate of soda or carbonate of potash dissolved in eight gallons of water are added and again agitated for one hour, and allowed to repose four hours, when the aqueous solutions will be found at the lower part of the cistern, and the fully purified eupion floating on the surface.

The eupion oil, or the oil containing eupion with paraffine in solution, drawn off from the cock U in the first distillation is purified in a substantially similar manner except that the steam heat is higher, and the quantities of salt, chromate, and water are less. The eupion oil thus treated is then placed in the boiler, O, where it is redistilled into S, by means of the oil bath as before.

The impure paraffine discharged through the pipe Q is also partially redistilled, and the distillate mixed with the impure eupion oil to be treated as described. The remaining half is treated with the acid, &c., and powerfully pressed in bags like linseed or spermaceti, to be finally manufactured into candles.

It is worthy of particular remark that the patentee finds mixtures of oils, viz., eupion, eupion oil, and paraffine, mixed together in the several proportions as yielded by the first distillation, the best suited for lubricating machinery. In that part of the processes of purification before described, which consist of redistillation of the three several products of the petroleum, the redistillation proceeds as the first distillation did, in one continuous operation in the three boilers, the boilers having been discharged of their contents after the first distillation described.

MECHANICS

Inventors, and Manufacturers

TWELFTH YEAR.

PROSPECTUS OF THE

SCIENTIFIC AMERICAN.

This work differs materially from other publications being an ILLUSTRATED PERIODICAL, devoted chiefly to the promulgation of information relating to the various Mechanic and Chemic Arts, Industrial Manufactures, Agriculture, Patents, Inventions, Engineering, Millwork, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

The *SCIENTIFIC AMERICAN* is printed once a week, in convenient quarto form for binding, and presents an elegant typographical appearance. Every number contains *Eight Large Pages*, of reading, abundantly illustrated with *ORIGINAL ENGRAVINGS*—all of them engraved expressly for this publication.

All the most valuable patented discoveries are delineated and described in its issues, so that, as respects inventions, it may be justly regarded as an ILLUSTRATED REPERTORY, where the inventor may learn what has been done before him, and where he may bring to the world a KNOWLEDGE of his own achievements.

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and *People of every Profession in Life*, will find the *SCIENTIFIC AMERICAN* to be of great value in their respective callings.

REPORTS OF U. S. PATENTS granted are also published every week, including *Official Copies* of all the PATENT CLAIMS. These Claims are published in the SCIENTIFIC AMERICAN *in advance of all other papers.*

Much might be added in this Prospectus, to prove that the SCIENTIFIC AMERICAN is a publication which every Inventor, Mechanic, Artisan, and Engineer in the United States should patronize; but the publication is so thoroughly known throughout the country that we refrain from occupying further space.

Its counsels and suggestions will save them *Hundreds of Dollars* annually, besides affording them continual source of knowledge, the experience of which is beyond pecuniary estimate.

TERMS OF SUBSCRIPTION—$2 a year, or $1 for six months

CLUB RATES.

Five Copies for Six Months,	$4
Five Copies for Twelve Months,	$8
Ten Copies for Six Months,	$8
Ten Copies for Twelve Months,	$15
Fifteen Copies for Twelve Months,	$22
Twenty Copies for Twelve Months,	$28

For all Clubs of 20 and over, the yearly subscription is only $1·40.

Post-pay all letters and direct to

MUNN & CO.,
128 Fulton street, New York.

© 1857 SCIENTIFIC AMERICAN, INC.